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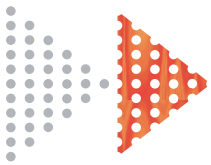
Direct Ltd



Service Manual

MODELS:GWH09NA-K3NNB1C
GWH09NA-K3NNA9C
GWH12NB-K3NNB1C
GWH12NB-K3NNA9C
GWH12NB-K3NNA3C
(Refrigerant R410A)

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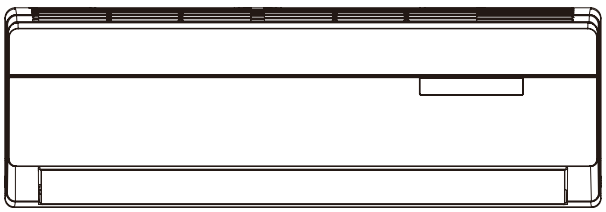
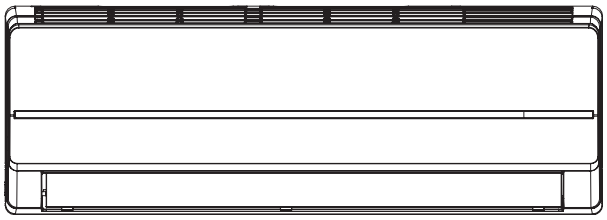
Summary and Features

Indoor Unit:

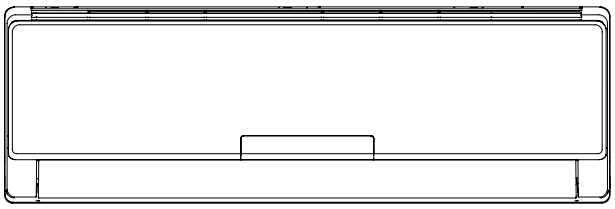
GWH09NA-K3NNB1C/I
GWH12NB-K3NNB1C/I



GWH09NA-K3NNA9C/I
GWH12NB-K3NNA9C/I

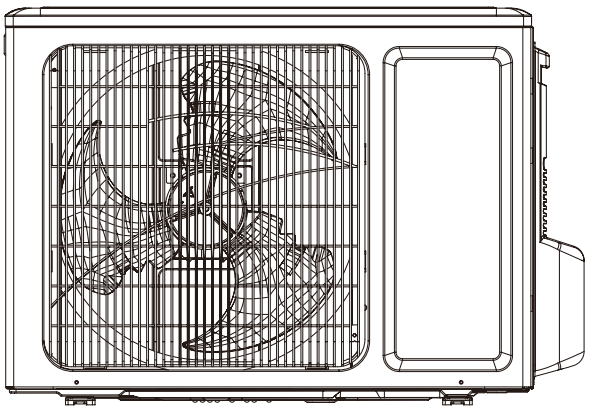


GWH12NB-K3NNA3C/I



Outdoor Unit:

GWH09NA-K3NNB1C/O
GWH12NB-K3NNB1C/O



Remote Controller:
YX1F

1. Safety Precautions

Installing, starting up, and servicing air conditioner can be hazardous due to system pressure, electrical components, and equipment location, etc.

Only trained, qualified installers and service personnel are allowed to install, start-up, and service this equipment. Untrained personnel can perform basic maintenance functions such as cleaning coils. All other operations should be performed by trained service personnel.

When handling the equipment, observe precautions in the manual and on tags, stickers, and labels attached to the equipment. Follow all safety codes. Wear safety glasses andwork gloves. Keep quenching cloth and fire extinguisher nearby when brazing.

Read the instructions thoroughly and follow all warnings or cautions in literature and attached to the unit. Consult local building codes and current editions of national as well as local electrical codes.

Recognize the following safety information:

⚠ Warning	Incorrect handling could result in personal injury or death.
⚠ Caution	Incorrect handling may result in minor injury,or damage to product or property.

⚠ Warning

All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual.

- Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.
- Never supply power to the unit unless all wiring and tubing are completed, reconnected and checked.
- This system adopts highly dangerous electrical voltage. Incorrect connection or inadequate grounding can cause personal injury or death. Stick to the wiring diagram and all the instructions when wiring.
- Have the unit adequately grounded in accordance with local electrical codes.
- Have all wiring connected tightly. Loose connection may lead to overheating and a possible fire hazard.

All installation or repair work shall be performed by your dealer or a specialized subcontractor as there is the risk of fire, electric shock, explosion or injury.

- Make sure the outdoor unit is installed on a stable, level surface with no accumulation of snow, leaves, or trash beside.
- Make sure the ceiling/wall is strong enough to bear the weight of the unit.
- Make sure the noise of the outdoor unit does not disturb neighbors.
- Follow all the installation instructions to minimize the risk of damage from earthquakes, typhoons or strong winds.
- Avoid contact between refrigerant and fire as it generates poisonous gas.
- Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant line as it may lead to rupture and other hazards.
- Make sure no refrigerant gas is leaking out when installation is completed.
- Should there be refrigerant leakage, the density of refrigerant in the air shall in no way exceed its limited value, or it may lead to explosion.
- Keep your fingers and clothing away from any moving parts.
- Clear the site after installation. Make sure no foreign objects are left in the unit.
- Always ensure effective grounding for the unit.

⚠ Caution

- Never install the unit in a place where a combustible gas might leak, or it may lead to fire or explosion.
- Make a proper provision against noise when the unit is installed at a telecommunication center or hospital.
- Provide an electric leak breaker when it is installed in a watery place.
- Never wash the unit with water.
- Handle unit transportation with care. The unit should not be carried by only one person if it is more than 20kg.
- Never touch the heat exchanger fins with bare hands.
- Never touch the compressor or refrigerant piping without wearing glove.
- Do not have the unit operate without air filter.
- Should any emergency occur, stop the unit and disconnect the power immediately.
- Properly insulate any tubing running inside the room to prevent the water from damaging the wall.

2. Specifications

2.1 Unit Specifications

Model			GWH09NA-K3NNB1C GWH09NA-K3NNA9C
Product Code			CA136006900 CA182002800
Power Supply	Rated Voltage	V ～	220-240
	Rated Frequency	Hz	50
	Phases		1
Power Supply Mode			Indoor
Cooling Capacity		W	2638
Heating Capacity		W	2814
Cooling Power Input		W	821
Heating Power Input		W	779
Cooling Power Current		A	3.64
Heating Power Current		A	3.46
Rated Input		W	1120
Rated Current		A	4.97
Air Flow Volume(SH/H/M/L/SL)		m^3/h	400/350/310/280/-
Dehumidifying Volume		L/h	0.8
EER		W/W	3.21
COP		W/W	3.61
SEER		W/W	/
HSPF		W/W	/
Application Area		m^2	12-18
Indoor Unit	Model of indoor unit		GWH09NA-K3NNB1C/I GWH09NA-K3NNA9C/I
	Fan Type		Cross-flow
	Diameter Length(DXL)	mm	Φ85X532
	Fan Motor Cooling Speed(SH/H/M/L/SL)	r/min	1390/1280/1180/1080/-
	Fan Motor Heating Speed(SH/H/M/L/SL)	r/min	1350/1250/1140/1040/-
	Output of Fan Motor	W	10
	Fan Motor RLA	A	0.13
	Fan Motor Capacitor	μF	1
	Input of Heater	W	/
	Evaporator Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7
	Row-fin Gap	mm	2-1.5
	Coil Length (LXDXW)	mm	526X25.4X228.6
	Swing Motor Model		MP24AA
	Output of Swing Motor	W	1.5
	Fuse	A	3.15
	Sound Pressure Level (SH/H/M/L/SL)	dB (A)	40/37/35/32/-
	Sound Power Level (SH/H/M/L/SL)	dB (A)	50/47/45/42/-
	Dimension (WXHXD)	mm	730X255X174
	Dimension of Carton Box (LXWXH)	mm	790X245X325
	Dimension of Package(LXWXH)	mm	793X248X340
	Net Weight	kg	8
	Gross Weight	kg	10.5

Outdoor Unit	Model of Outdoor Unit		GWH09NA-K3NNB1C/O
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO. LTD. /GREE
	Compressor Model		QXA-B102C150
	Compressor Oil		POE(Ze-GLES RB68EP)
	Compressor Type		Rotary
	L.R.A.	A	15
	Compressor RLA	A	3.9
	Compressor Power Input	W	850
	Overload Protector		Internal(UP3-21)
	Throttling Method		Capillary
	Operation Temp	℃	16 ～ 30
	Ambient Temp (Cooling)	℃	18 ～ 43
	Ambient Temp (Heating)	℃	-7 ～ 24
	Condenser Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7.94
	Rows-fin Gap	mm	1-1.4
	Coil Length (LXDXW)	mm	730X19.05X506
	Fan Motor Speed	rpm	830
	Output of Fan Motor	W	30
	Fan Motor RLA	A	0.23
	Fan Motor Capacitor	μF	2.5
	Air Flow Volume of Outdoor Unit	m^3/h	1600
	Fan Type		Axial-flow
	Fan Diameter	mm	Φ400
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	3.8
	Permissible Excessive Operating Pressure for the Suction Side	MPa	1.2
	Sound Pressure Level (H/M/L)	dB (A)	50/-/-
	Sound Power Level (H/M/L)	dB (A)	60/-/-
	Dimension (WXHXD)	mm	776X540X320
	Dimension of Carton Box (LXWXH)	mm	820X355X580
	Dimension of Package(LXWXH)	mm	823X358X605
	Net Weight	kg	31
	Gross Weight	kg	34
	Refrigerant		R410A
	Refrigerant Charge	kg	0.66
Connection Pipe	Length	m	5
	Gas Additional Charge	g/m	20
	Outer Diameter Liquid Pipe	mm	Φ6
	Outer Diameter Gas Pipe	mm	Φ9.52
	Max Distance Height	m	10
	Max Distance Length	m	15

The above data is subject to change without notice. Please refer to the nameplate of the unit.

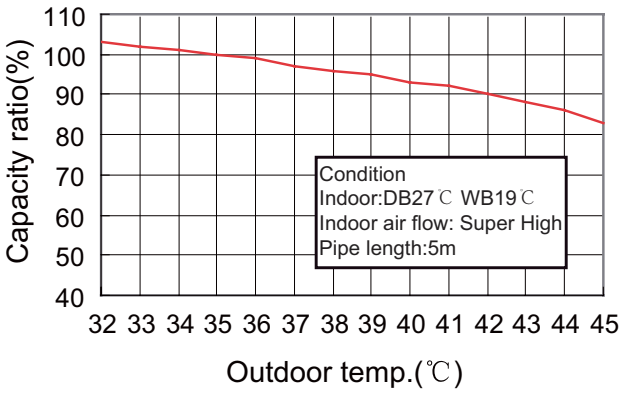
Model			GWH12NB-K3NNB1C GWH12NB-K3NNA9C GWH12NB-K3NNA3C
Product Code			CA136007000 CA182002900 CA171012600
Power Supply	Rated Voltage	V ~	220-240
	Rated Frequency	Hz	50
	Phases		1
Power Supply Mode			Indoor
Cooling Capacity		W	3223
Heating Capacity		W	3516
Cooling Power Input		W	1004
Heating Power Input		W	973
Cooling Power Current		A	4.45
Heating Power Current		A	4.32
Rated Input		W	1450
Rated Current		A	6.43
Air Flow Volume(SH/H/M/L/SL)		m^3/h	550/500/420/350/-
Dehumidifying Volume		L/h	1.2
EER		W/W	3.21
COP		W/W	3.61
SEER		W/W	/
HSPF		W/W	/
Application Area		m^2	15-22
Indoor Unit	Model of indoor unit		GWH12NB-K3NNB1C/I GWH12NB-K3NNA9C/I GWH12NB-K3NNA3C/I
	Fan Type		Cross-flow
	Diameter Length(DXL)	mm	Φ85X596
	Fan Motor Cooling Speed(SH/H/M/L/SL)	r/min	1350/1250/1100/950/-
	Fan Motor Heating Speed(SH/H/M/L/SL)	r/min	1350/1250/1100/950/-
	Output of Fan Motor	W	10
	Fan Motor RLA	A	0.13
	Fan Motor Capacitor	μF	1
	Input of Heater	W	/
	Evaporator Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7
	Row-fin Gap	mm	2-1.5
	Coil Length (LXDXW)	mm	581X25.4X264
	Swing Motor Model		MP24AA
	Output of Swing Motor	W	1.5
	Fuse	A	3.15
	Sound Pressure Level (SH/H/M/L/SL)	dB (A)	41/38/35/32/-
	Sound Power Level (SH/H/M/L/SL)	dB (A)	51/48/45/42/-
	Dimension (WXHXD)	mm	790X265X177
	Dimension of Carton Box (LXWXH)	mm	870X248X355
	Dimension of Package(LXWXH)	mm	873X251X370
	Net Weight	kg	9
	Gross Weight	kg	12

Outdoor Unit	Model of Outdoor Unit		GWH12NB-K3NNB1C/O
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO. LTD. /GREE
	Compressor Model		QXA-B120C150
	Compressor Oil		RB68EP
	Compressor Type		Rotary
	L.R.A.	A	23
	Compressor RLA	A	4.7
	Compressor Power Input	W	1020
	Overload Protector		Internal
	Throttling Method		Capillary
	Operation Temp	℃	16 ～ 30
	Ambient Temp (Cooling)	℃	18 ～ 43
	Ambient Temp (Heating)	℃	-7 ～ 24
	Condenser Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ9.52
	Rows-fin Gap	mm	1-1.4
	Coil Length (LXDXW)	mm	748X22X508
	Fan Motor Speed	rpm	770
	Output of Fan Motor	W	35
	Fan Motor RLA	A	0.52
	Fan Motor Capacitor	μF	2.5
	Air Flow Volume of Outdoor Unit	m^3/h	1600
	Fan Type		Axial-flow
	Fan Diameter	mm	Φ400
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	3.8
	Permissible Excessive Operating Pressure for the Suction Side	MPa	1.2
	Sound Pressure Level (H/M/L)	dB (A)	52/-/-
	Sound Power Level (H/M/L)	dB (A)	62/-/-
	Dimension (WXHXD)	mm	776X540X320
	Dimension of Carton Box (LXWXH)	mm	820X355X580
	Dimension of Package(LXWXH)	mm	823X358X595
	Net Weight	kg	31
	Gross Weight	kg	35
	Refrigerant		R410A
	Refrigerant Charge	kg	0.84
Connection Pipe	Length	m	5
	Gas Additional Charge	g/m	20
	Outer Diameter Liquid Pipe	mm	Φ6
	Outer Diameter Gas Pipe	mm	Φ9.52
	Max Distance Height	m	10
	Max Distance Length	m	20

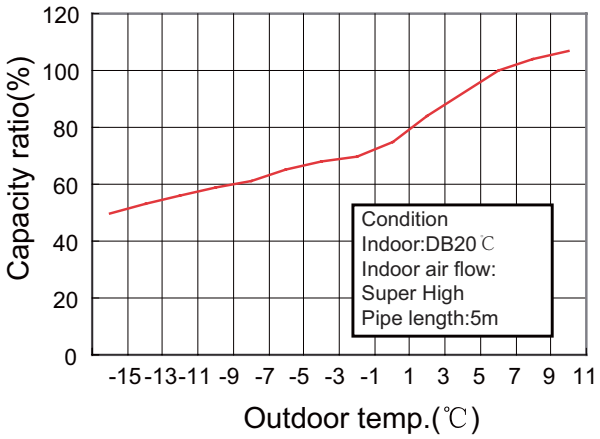
The above data is subject to change without notice. Please refer to the nameplate of the unit.

2.2 Capacity Variation Ratio According to Temperature

Cooling



Heating



2.3 Operation Data

Cooling

Temperature condition (°C)		Model name	Standard pressure	Heat exchanger pipe temp.		Indoor fan mode	Outdoor fan mode(rpm)
Indoor	Outdoor		P (MPa)	T1 (°C)	T2 (°C)		
27/19	35/24	09K	0.8~1.0	in:8~11 out:11~14	in:75~85 out:37~43	Super High	830
		12K					770

Heating

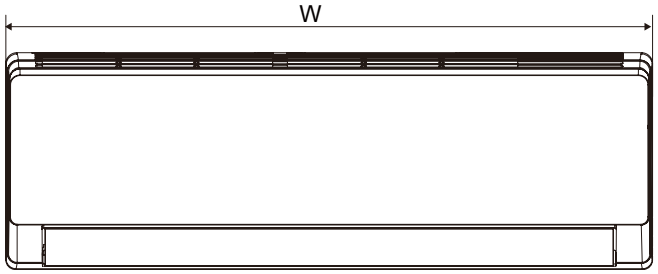
Temperature condition (°C)		Model name	Standard pressure	Heat exchanger pipe temp.		Indoor fan mode	Outdoor fan mode(rpm)
Indoor	Outdoor		P (MPa)	T1 (°C)	T2 (°C)		
20/-	7/6	09K	3.5~3.8	in:75~85 out:37~43	in:1~3 out:2~5	Super High	830
		12K					770

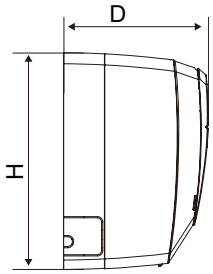
P: Pressure of air pipe connecting indoor and outdoor units
T1: Inlet and outlet pipe temperature of evaporator
T2: Inlet and outlet pipe temperature of condenser

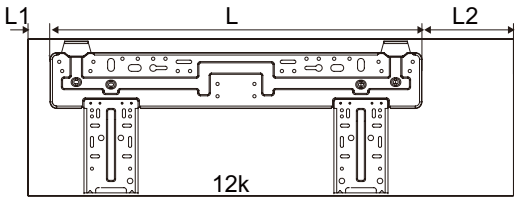
NOTES :
(1) Measure surface temperature of heat exchanger pipe around center of heat exchanger path U bent.
(Thermistor themometer)
(2) Connecting piping condition : 5 m

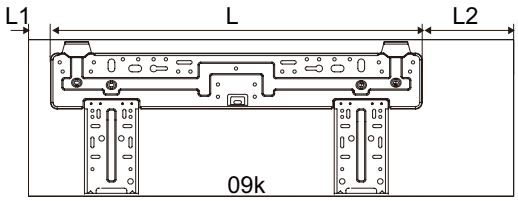
3. Construction Views

3.1 Indoor Unit





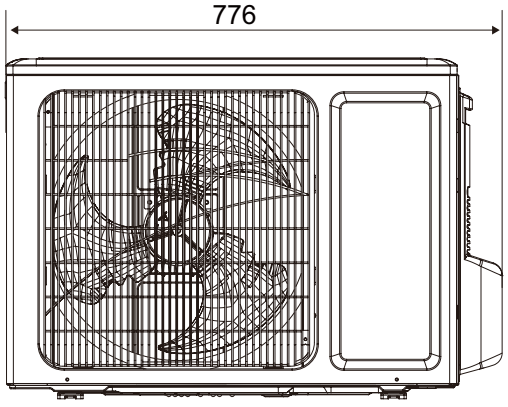


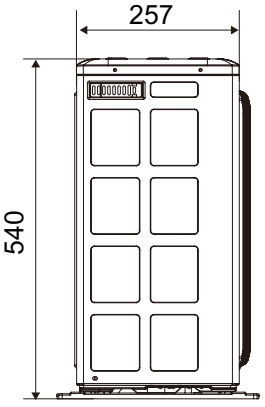


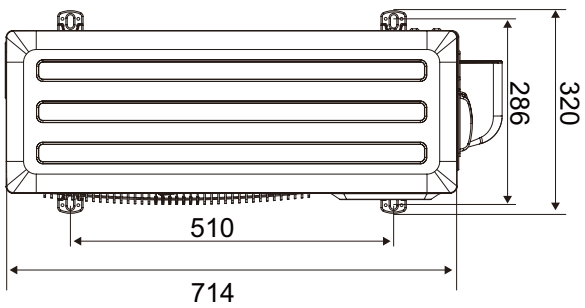
Model	W	H	D	L	L1	L2
12K	790	265	177	605	35	150
09K	730	255	174	562	27	141

Unit:mm

3.2 Outdoor Unit



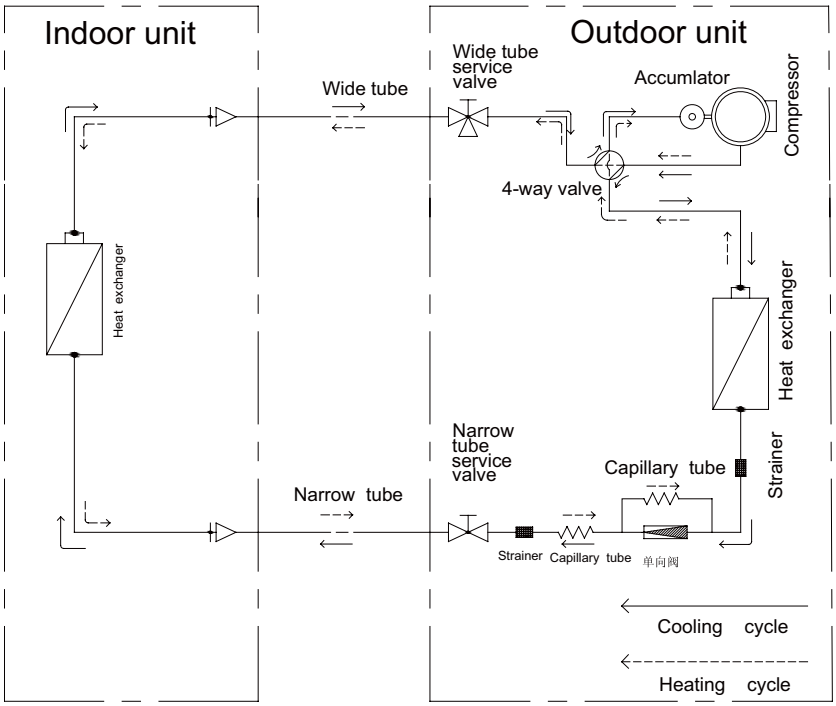




Unit:mm

4. Refrigerant System Diagram

Cooling &Heating Models



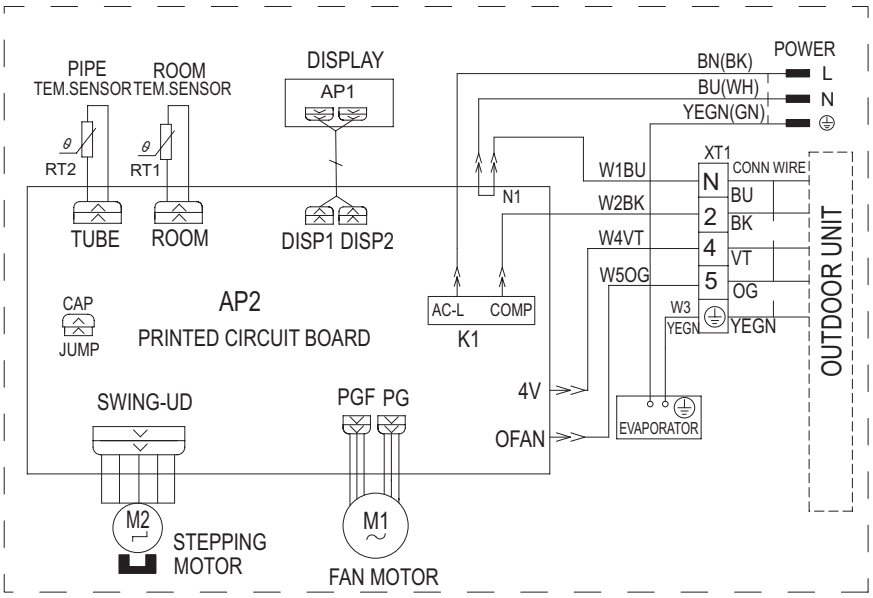
Refrigerant pipe diameter
Liquid : 1/4" (6 mm)
Gas : 3/8" (9.52mm)

5. Schematic Diagram

5.1 Electrical Wiring

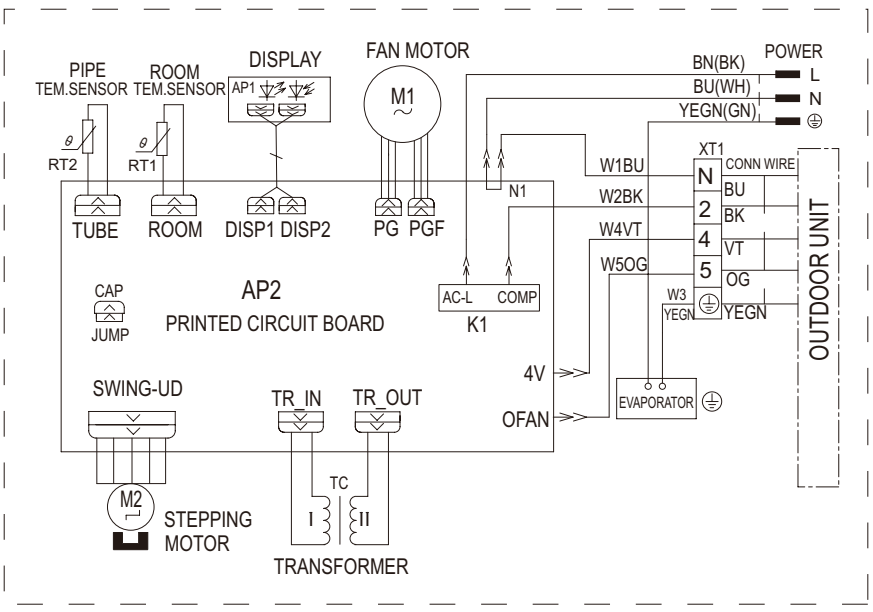
● **Indoor Unit**

(1)Models: GWH09NA-K3NNB1C/I GWH09NA-K3NNA9C/I

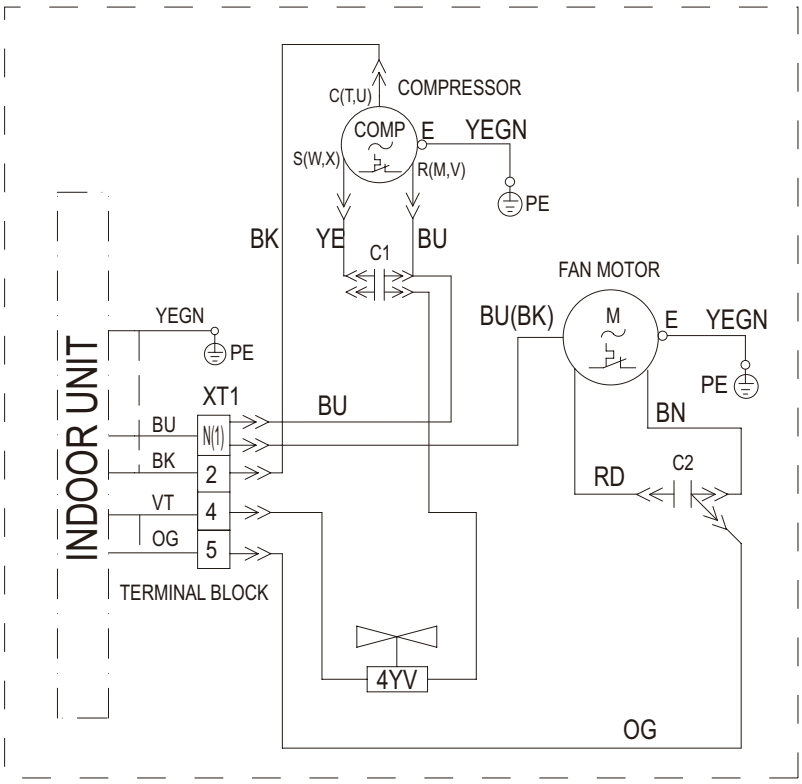


Symbol	Color symbol
OG	ORANGE
VT	VIOLET
WH	WHITE
YE	YELLOW
RD	RED
YEGN	YELLOW GREEN
SAT	OVERLOAD
BN	BROWN
BU	BLUE
BK	BLACK
Symbol	Parts name
⏚	PROTECTIVE EARTH
COMP	COMPRESSOR

(2)Models: GWH12NB-K3NNB1C/I GWH12NB-K3NNA9C/I GWH12NB-K3NNA3C/I



- **Outdoor Unit**

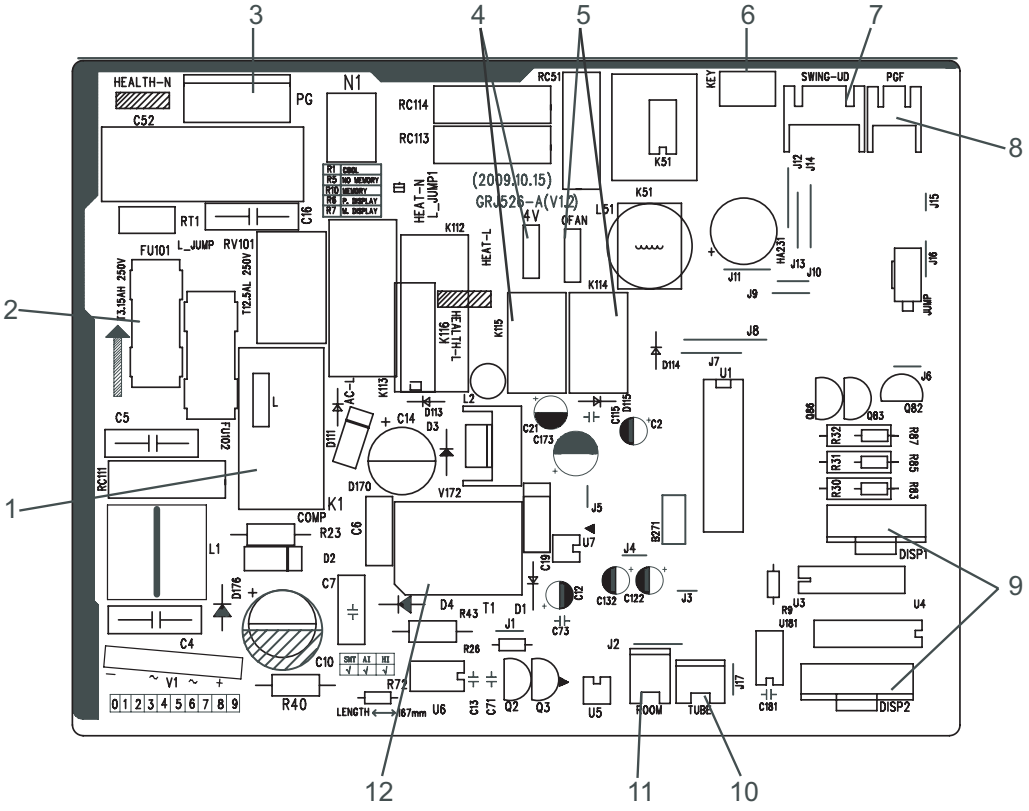


These circuit diagrams are subject to change without notice, please refer to the one supplied with the unit.

5.2 Printed Circuit Board

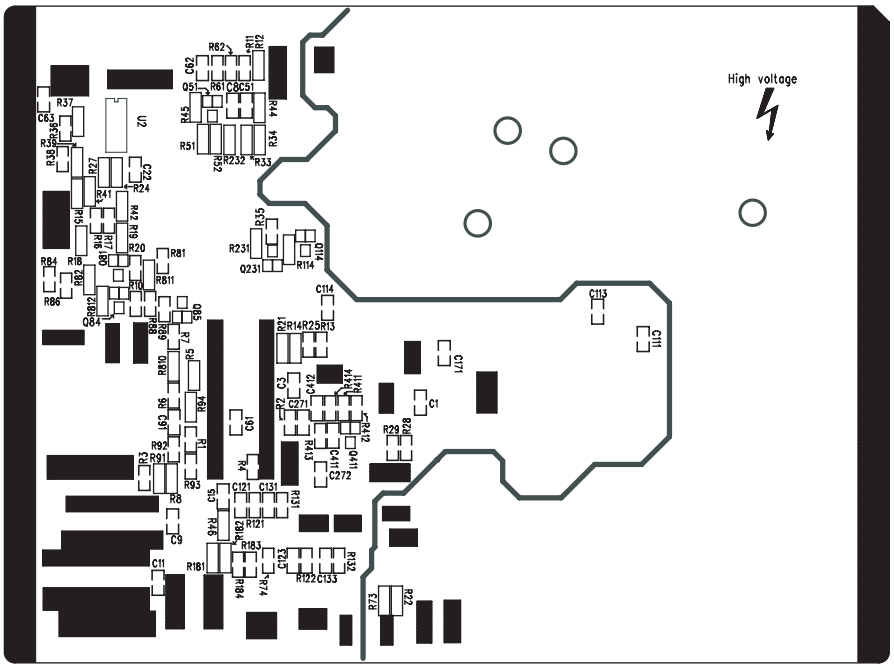
09K

- **TOP VIEW**



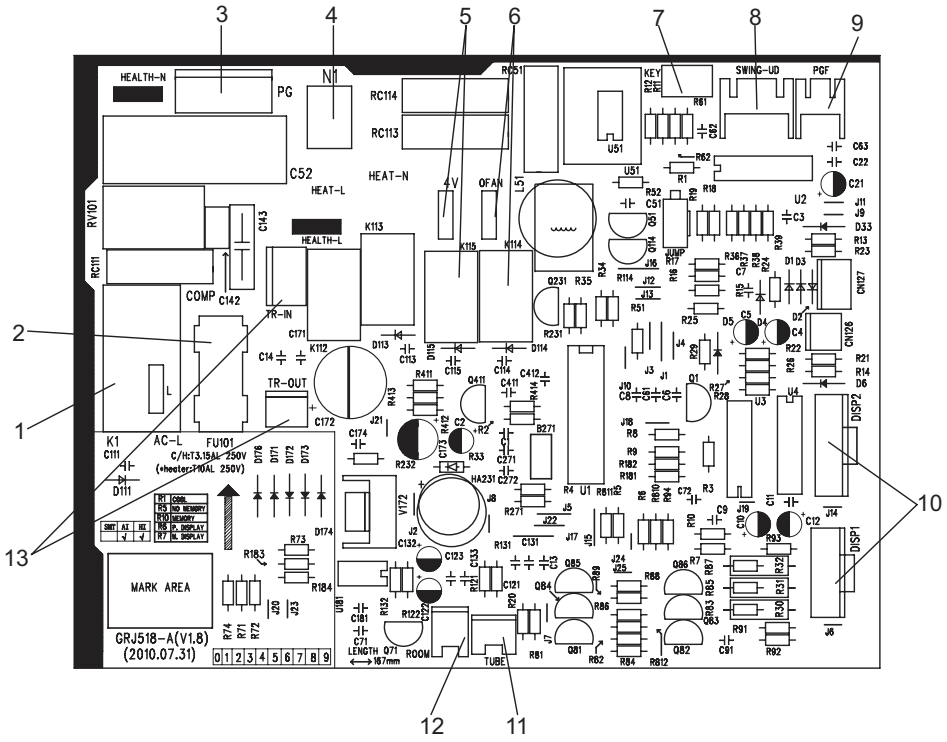
1	Compressor control relay K1
2	Protective tube
3	PG motor control terminal
4	4-way valve control terminal & control relay K115
5	Outdoor fan control terminal & control relay K114
6	Auto button
7	Up & down swing control terminal
8	PG motor feedback terminal
9	Display control terminal
10	Tube temperature sensor connector
11	Ambient temperature sensor connector
12	High frequency transformer T1

- **BOTTOM VIEW**



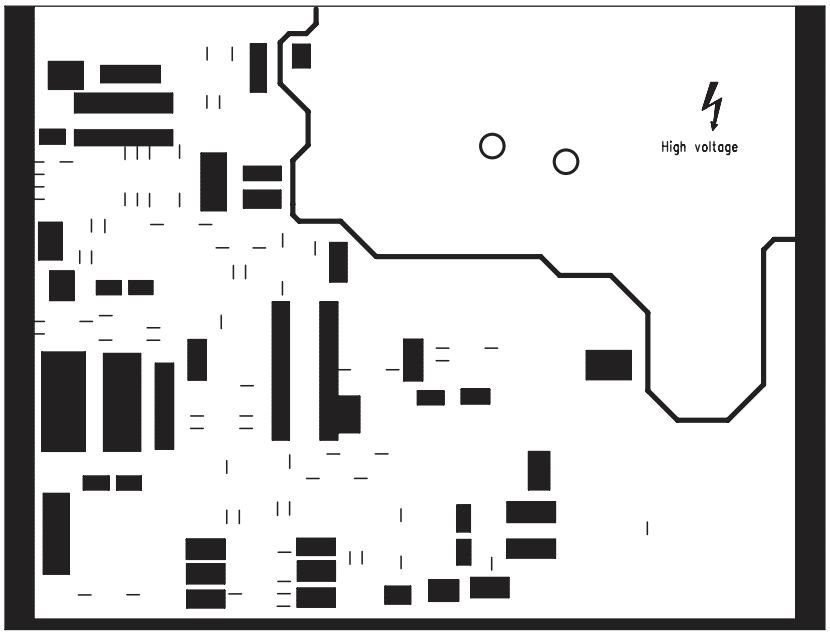
12K

- TOP VIEW



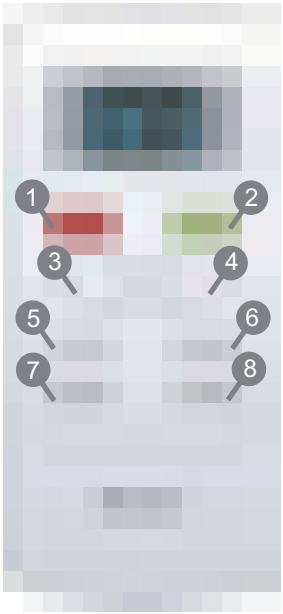
1	Compressor control relay
2	Protective tube
3	Indoor fan controls terminal
4	Terminal of power neutral wire interface
5	4-way valve control terminal and relay K115
6	Outdoor fan control terminal and relay K114
7	Auto button
8	Up&down swing control terminal
9	Interface feedback from indoor fan
10	Display control terminal
11	Interface of pipe temperature sensor
12	Interface of ambient temperature sensor
13	Input interface TR-IN and output interface TR-OUT of linear transformer

- BOTTOM VIEW



6. Function and Control

6.1 Remote Control Operations



1 ON/OFF
Press it to start or stop operation.

2 MODE
Press it to select operation mode(AUTO/COOL/DRY/FAN/HEAT).

3 - :Press it to decrease temperature setting.

4 + :Press it to increase temperature setting.

5 FAN
Press it to set fan speed.

6 SWING
Press it set swing angle.

7 SLEEP

8 TIMER
Press it set auto-on/auto-off timer.

1 ON/OFF :
Press this button to start the unit operation .Press this button again to stop the unit operation.

2 MODE :
Each time you press the button,a mode is selected in a sequence that goes from AUTO,COOL,DRY, FAN,and HEAT*, as the following:

AUTO ▶ COOL ▶ DRY ▶ FAN ▶HEAT *

*Note:Only for models with heating function.

3 - :
Press this button to decrease set temperature.Holding it down above 2 seconds rapidly decreases set temperature. In AUTO mode, set temperature is not adjustable.

4 + :
Press this button to increase set temperature.Holding it down above 2 seconds rapidly increases set temperature. In AUTO mode, set temperature is not adjustable.

5 FAN:
This button is used for setting Fan Speed in the sequence that goes from AUTO, , , to ,then back to Auto.

Auto → → → →

Speed 1 Speed 2 Speed 3 Speed 4

6 SWING:
Press this key to activate or deactivate the swing.

7 SLEEP:

Press this button to go into the SLEEP operation mode. Press it again to cancel. This function is available in COOL , HEAT (Only for models with heating function) or DRY mode to maintain the most comfortable temperature for you.

8 TIMER:

Press this button to initiate auto-on/auto-off timer. To cancel auto-timer program, press this button twice.

9 Combination of "+" and "-" buttons: About lock

Press "**+** " and "**-**" buttons simultaneously to lock or unlock the keypad. If the remote controller is locked , is displayed In this case, pressing any button, blinks three times.

10 Combination of "MODE " and "-" buttons: About switch between fahrenheit and cenrigrade

At unit OFF, press "MODE " and "**-** " buttons simultaneously to switch between ℃ and ℉.

11 Combination of "+" and "FAN" buttons:About Lamp

Under switch-on or switch-off state, you may hold "+" and "FAN"buttons simultaneously for 3 seconds to set the lamp on or off and send the code. After being energized, the lamp is defaulted on.

Replacement of Batteries

1.Remove the battery cover plate from the rear of the remote controller. (As shown in the figure)

2.Take out the old batteries.

3.Insert two new AAA1.5V dry batteries, and pay attention to the polarity.

4. Close the battery cover plate.

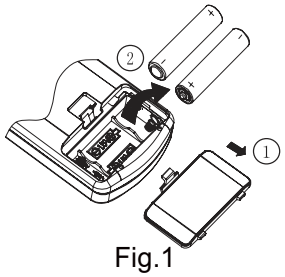


Fig.1

★ Notes:

- When replacing the batteries, do not use old or different types of batteries otherwise, it may cause malfunction.
- If the remote controller will not be used for a long time, please remove batteries to prevent batteries from leaking.
- The operation should be performed in its receiving range.
- It should be kept 1m away from the TV set or stereo sound sets.
- If the remote controller does not operate normally, please take the batteries out and replace them after 30 seconds. If still not operating properly,replace the batteries.

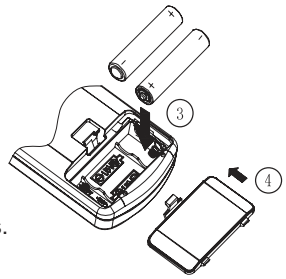


Fig.2

6.2 Description of Each Control Operation

1 Temperature Parameters

◆Indoor preset temperature (Tpreset)
◆Indoor ambient temperature (Tamb.)

2 Basic functions (The temperature in this manual is expressed by Centigrade. If Fahrenheit, is used, the switchover between them is Tf=TcX1.8+32.)

Once the unit is energized, the compressor shall never be restarted except 3mins interval at least. For the first energization, if the unit is at off status before power failure, the compressor can be restarted without 3-min delay. But if the unit is at on status before power failure, the compressor shall be restarted with 3mins delay. Once the compressor is started up, the compressor won't stop running within 6mins with the change of room temperature.

(1)Cooling mode

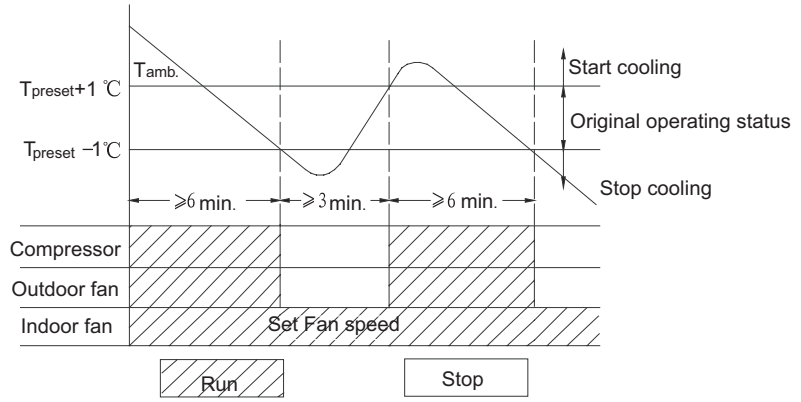
①Cooling conditions and process

When Tamb. ≥Tpreset+1℃, the unit starts cooling operation. In this case, the compressor and the outdoor fan operate and the indoor fan operates at set speed.

When Tamb. ≤Tpreset-1℃, the compressor and the outdoor fan stop while the indoor fan runs at set speed.

When Tpreset-1℃＜Tamb. ＜Tpreset+1℃, the unit will maintain its previous running state.

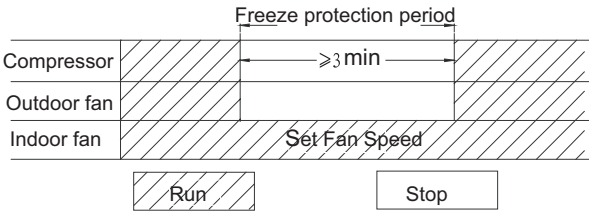
In cooling mode, the four-way valve is de-energized; temperature setting range is 16～30℃； the indoor unit displays operation icon, cooling icon and set temperature.



②Protection Functions

◆Freeze potection

If the system is under freeze protection, the compressor and the outdoor fan stop operation, and the indoor fan operates at set speed. If freeze protection is eliminated and the compressor has been out of operation for 3 minutes, the unit will resume its previous running state.



(2)Dry Mode

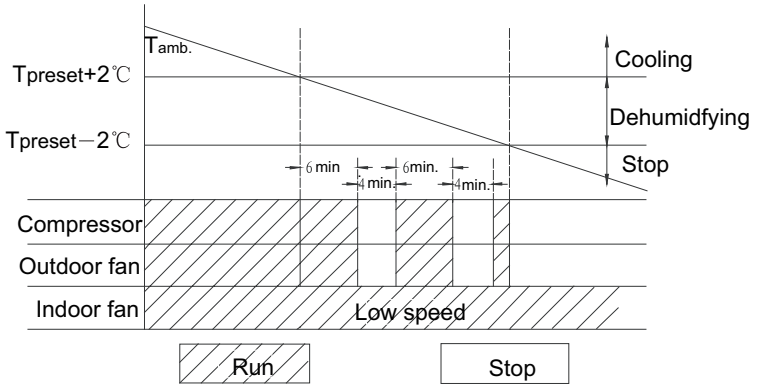
①Dry Conditions and Process

When Tamb. ＞Tpreset+2℃, the unit will run in dry and cooling mode, in that case the compressor and outdoor fan will run and the indoor fan will run at low speed.

When Tpreset-2℃≤Tamb. ≤Tpreset+2℃, the unit will run in dry mode, in that case, the indoor fan will run at low speed, the compressor and the outdoor fan will be stopped in 6 min. After 4 min, the compressor and the outdoor fan will be restarted. Dry process is cycled as the above.

When Tamb.＜Tpreset-2℃, the compressor and the outdoor fan will stop working and the indoor fan will run at low speed.

In this mode, the four-way valve is de-energized, and setting temperature range is between 16～30℃. The displayer will display running and drying icons and setting temperature.



②Protection

◆Freeze potection

If freeze protection of the system is detected in dry and cooling mode, the compressor and the outdoor fan will stop running and the indoor fan will run at low speed. When the freeze protection is released and the compressor has been stopped for 3 min, the complete unit will resume its previous running state. Upon the condition that the compressor runs for 6 min and stops for 4 min is met and freeze protection is detected, the compressor and the outdoor fan will stop running and the indoor fan will run at low speed. When the freeze protection is released and the compressor has been stopped for 4 min, the complete unit will resume its previous running state.

③Other protection

Other protections are the same as those in cooling mode.

(3)Heating mode

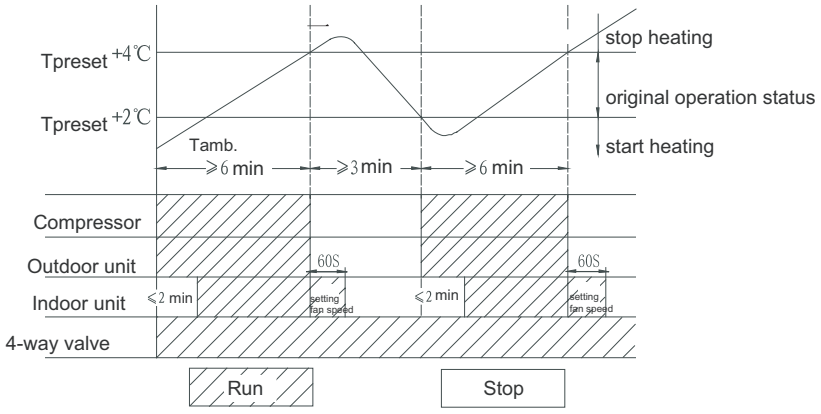
①Heating conditions and process

When Tamb. ≤Tpreset+2℃, the unit will run in heating mode, in that case, the four-way valve, the compressor and the outdoor fan will run simultaneously. The indoor fan will delay at most 2mins to run. The indoor fan will run 2 mins delayed at most.

When Tamb≥Tpreset+4℃, the compressor and the outdoor fan will stop and the four-way valve will remain energized(keep energizing) and the indoor fan will blow residual heat.

When T_{preset} +2℃＜$T_{amb.}$ ＜ T_{preset} +4℃, the unit will maintain its previous running state.

Under this mode, the four-way valve is energized, and setting temperature range is 16～30℃. The displayer will display running and heating icons and setting temperature.



②Defrosting Conditions and Process

The unit with intelligent defrosting function can defrost according to frosting conditions. Dual8 displays H1.

③Protection Function

◆High Temp Resistance Protection

If it is detected that the evaporator tube temperature is superheating, the outdoor fan will stop working. When the tube temperature resumes to normal condition, the outdoor fan will resume running.

◆Noise Silencing Protection

If the unit is stopped by pressing ON/OFF or during switchover of modes, the reversing valve will be stopped after 2 min.

(4)Fan mode

In this mode, indoor fan runs at setting speed, and the compressor, the outdoor fan, the four-way valve and the electric heating tube will stop running.

In this mode, temperature setting range is 16～30℃. Displayer displays running icons and the setting temperature.

(5)Auto Mode

In this mode, the air conditioner will automatically select its running mode (cooling, heating or fan) with the change of ambient temperature. The displayer will display the running icons, actual running mode icon and setting temperature. There is 30s delay protection for mode switching. Protection functions are the same as those in any other mode.

3 Other Control

(1)Timer function

The mainboard combines general timer and clock timer functions. Timer functions are selected by equipping remote controller with different functions.

①General Timer:

Timer ON can be set under off state of unit. If timer ON reaches, the controller will run under previous setting mode. Timing interval is 0.5hr and the setting range is 0.5-24hr.

Timer OFF can be set under on state of unit. If timer OFF reaches, the unit is turned off. Timing interval is 0.5hr within the range of 0.5-24hr.

②Clock Timer:

If timer on is set under running state of unit, the system will continue running. If timer on is set under off state of unit, the system will run in presetting mode when timer on reaches.

If timer off is set under off state of unit, the system will keep standby state. If timer off is set under on state of unit, the system will stop running when timer off reaches.

Timer Change:

If the system is under timer state, the unit can be turned on/off by ON/OFF button of remote controller. Timing can also be reset and then the system runs according to the final setting.

If timer on and timer off is set at the same time under running state of system, the system will keep present running state till timer off reaches and then it will stop running.

If timer on and timer off are set at the same time under off state of system, the system will keep stopping till timer on reaches and then it will start running.

In the future, the system will run in presetting mode when timer on reaches and stop when timer off reaches every day. If timer on and timer off have the same setting, timer off is prevails.

(2)Auto Button

If press this button, the system will run in auto mode, and the indoor fan motor will run at auto speed; meanwhile, the swing motor will be running. Repress this button to turn off the unit.

(3)Buzzer

When the controller is energized or receives any command or signal from the buttons or the remote controller, the buzzer will give out a beep.

(4)Sleep Function

Choose the sleeping curve according to the preset temperature.

(5)Turbo Function

This function can be set in cooling or heating mode.

(6)Dry Function

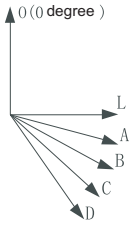
This function can be set in cooling or dry mode.

(7)Automatic Control of Fan Speed

In this mode, the indoor fan will automatically select high, medium or low speed with the change of ambient temperature.

(8)Up & Down Swing

After energization, up & down swing motor will rotate guide louver anticlockwise to position 0 to close air outlet.
After turning on the unit, if swing function has not been set, up & down guide louver will clockwise turn to position D in heating mode, or clockwise turn to level position L in other modes.
If the unit is turned on with swing function setting, the guide louver will swing between W and D. There are 7 kinds of swing states of guide louver: There are position L, A, B, C, D, and it swings and stops between L and D (angle between L and D is equiangular).
Upon stop of unit, the guide louver will close to position O. Swing action is valid only when swing command is set and indoor fan is running.
Note: If the position is set between L and B, A and C or B and D by remote controller, the guide louver will swing between L and D.



(9)Display

①Running icon and Mode icon

Upon energization, the unit will display all icons. Under standby state, running indicating icon is displayed in red. If the unit is started by remote controller, running indicating icon gives off light; Meanwhile, the present setting running mode icon will be displayed(mode LED: cooling, heating and dry mode). If the light button is turned off, all icons display will be closed.

②Dual-8 Display

After starting the unit for the first time, the nixie tube will display present setting temperature in default (16-30℃) the nixie tube will default to display the preset temperature. When displaying setting temperature signal is received, the nixie tube will display setting temp. If displaying ambient temperature signal is received, the nixie tube will display present indoor ambient temperature. If other states are set by remote controller, the display will keep previous. If remote controller receives valid signal during displaying ambient temperature, ambient temperature will be displayed after setting temperature is displayed for 5s. F1 is displayed for ambient temperature sensor malfunction, F2 for tube temp sensor malfunction of indoor unit and C5 for jumper cap has malfunction.
Some models: The remote controller will display present setting temp when this display is set. The controller will display ambient temp for 5s and then setting temp only when indoor ambient temp displaying state is switched from other displaying states by remote controller.

(10)Locked protection to PG motor

When starting the fan, if motor's rotational speed is slow for a period of time, the unit will display Locked and stop running to avoid auto protection for motor. If the unit is on currently, error code H6 will be displayed by the dual-8 nixie tube. If the unit is off currently, this locked malfunction information won't be displayed.

(11)Power-off memory

Memory content includes mode, up&down swing, light, setting temp and setting fan speed.
Upon power failure, the unit after power recovery will automatically start to run according to memory content. The system, last remote-control command without timer setting, will memorize the last remote-control signal and run according to it. If the last remote controller command has general timer function and the system is de-energized before setting time, the system will memorize the last timer function in remote controller command after re-energization and time will be recalculated. If there is function in the last remote controller command but setting time has reached, the system will act as timer on/off setting before de-energization. After re-energization, the system memorizes the running states before power failure without timer action.
Clock timer can not be memorized.

7. Installation Manual

7.1 Notices for installation

Caution

1.The unit should be installed only by authorized service center according to local or government regulations and in compliance with this manual.
2.Before installing, please contact with local authorized maintenance center. If the unit is not installed by the authorized service center, the malfunction may not be solved due to incovenient contact between the user and the service personnel.
3.When removing the unit to the other place, please firstly contact with the local authorized service center.
4.Warning: Before obtaining access to terminals, all supply circuits must be disconnected.
5.For appliances with type Y attachment, the instructions shall contain the substance of the following. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
6.The appliance must be positioned so that the plug is accessible.
7.The temperature of refrigerant line will be high; please keep the interconnection cable away from the copper tube.
8. The instructions shall state the substance of the following: This appliance is not intended for use by persons(including children)with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

7.1.1 Installation Site Instructions

Proper installation site is vital for correct and efficient operation of the unit. Avoid the following sites where:

- strong heat sources, vapours, flammable gas or volatile liquids are emitted.
- high-frequency electro-magnetic waves are generated by radio equipment, welders and medical equipment.
- salt-laden air prevails (such as close to coastal areas).
- the air is contaminated with industrial vapours and oils.
- the air contains sulphures gas such as in hot spring zones.
- corrosion or poor air quality exists.

7.1.2 Installation Site of Indoor Unit

1.The air inlet and outlet should be away from the obstructions. Ensure the air can be blown through the whole room.
2.Select a site where the condensate can be easily drained out, and where it is easily connected to outdoor unit.
3.Select a place where it is out of reach of children.
4.Select a place where the wall is strong enough to withstand the full weight and vibration of the unit.
5.Be sure to leave enough space to allow access for routine maintenance. The installation site should be 250cm or more above the floor.
6.Select a place about 1m or more away from TV set or any other electric appliance.
7.Select a place where the filter can be easily taken out.
8.Make sure that the indoor unit is installed in accordance with installation dimension instructions.
9.Do not use the unit in the laundry or by swimming pool etc.

7.1.3 Installation Site of Outdoor Unit

1. Select a site where noise and outflow air emitted by the unit will not annoy neighbors.
2. Select a site where there is sufficient ventilation.
3. Select a site where there is no obstruction blocking the inlet and outlet.
4. The site should be able to withstand the full weight and vibration.
5. Select a dry place, but do not expose under the direct sunlight or strong wind.
6. Make sure that the outdoor unit installation dimension should accord with installation dimension diagram, convenient for maintenance, repair.
7. The height difference of connecting the tubing within 10m, the length of connecting the tubing within 15(09k)m or 20(12k)m.
8. Select a place where it is out of reach for the children.
9. Select a place where the unit does not have negative impact on pedestrians or on the city.

7.1.4 Safety Precautions for Electric Appliances

1. A dedicated power supply circuit should be used in accordance with local electrical safety regulations.
2. Don't drag the power cord with excessive force.
3. The unit should be reliably earthed and connected to an exclusive earth device by the professionals.
4. The air switch must have the functions of magnetic tripping and heat tripping to prevent short circuit and overload.
5. The minimum distance between the unit and combustive surface is 1.5m.
6. The appliance shall be installed in accordance with national wiring regulations.
7. An all-pole disconnection switch with a contact separation of at least 3mm in all poles should be connected in fixed wiring.

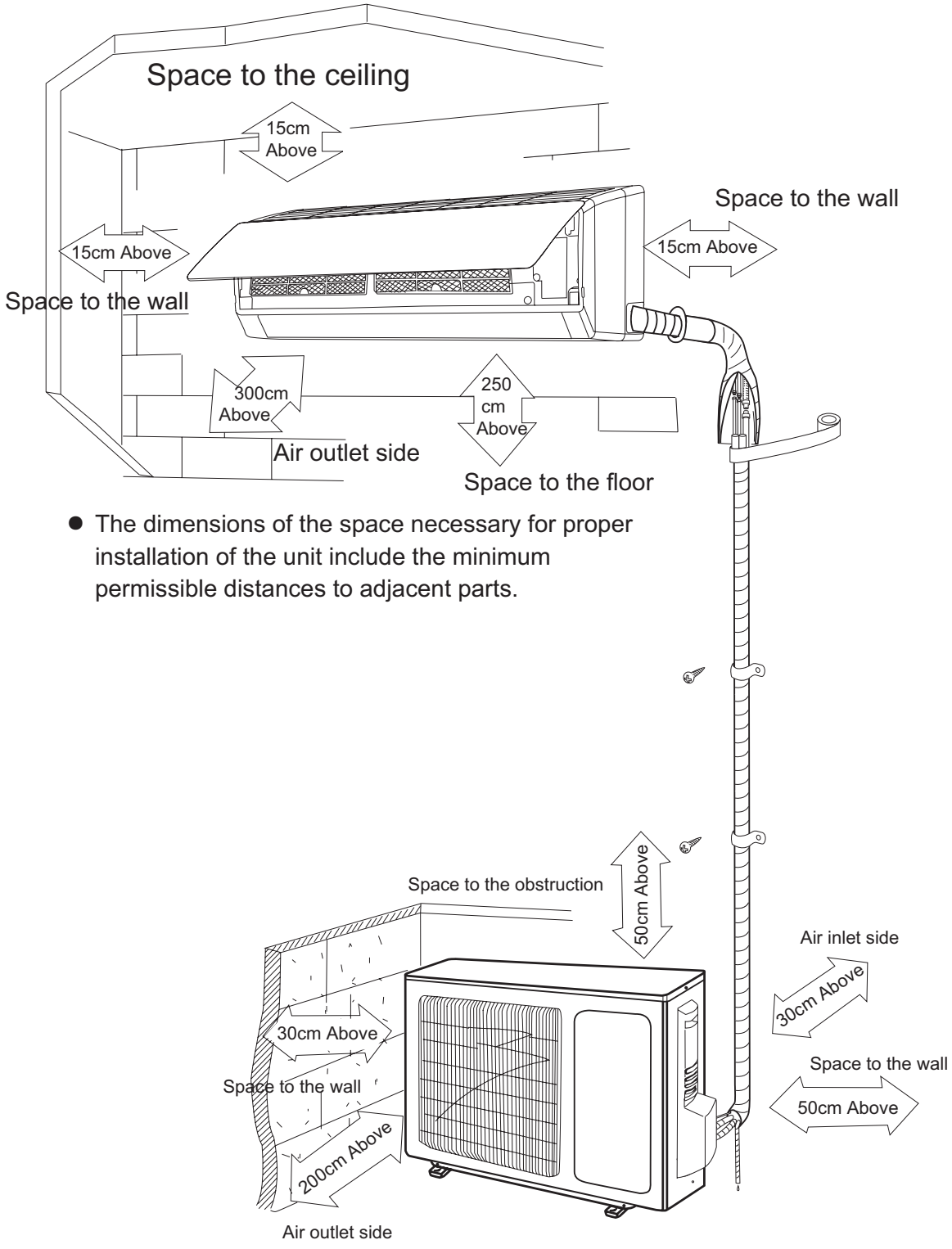
Note:

- Make sure the live wire, neutral wire and earth wire in the family power socket are properly connected. There should be reliable circuit in the diagram.
- Inadequate or incorrect electrical connections may cause electric shock or fire.

7.1.5 Earthing Requirements

1. Air conditioner is type I electric appliance. Please ensure that the unit is reliably earthed.
2. The yellow-green wire in air conditioner is the earthing wire which can not be used for other purposes. Improper earthing may cause electric shock.
3. The earth resistance should accord to the National Criterion.
4. The user power must offer the reliable earthing terminal. Please don't connect the earthing wire with the following :
   ① Water pipe. ② Gas pipe.
   ③ Contamination pipe. ④ Other places that professional personnel consider them unreliable.
5. The model and rated values of fuses should accord with the silk print on fuse cover or related PCB.

7.2 Installation Drawing



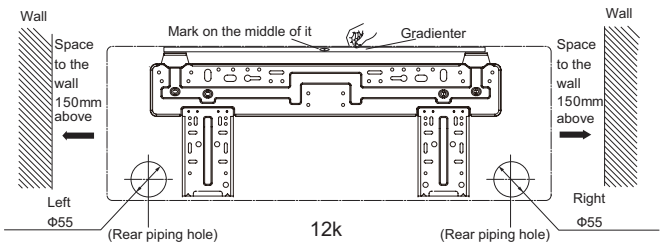
- The dimensions of the space necessary for proper installation of the unit include the minimum permissible distances to adjacent parts.

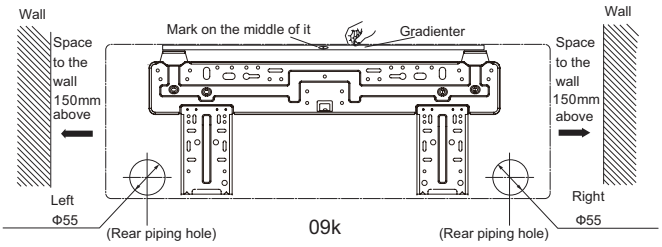
Schematic diagram being reference only (outdoor unit is with variation), please refer to real product for authentic information.

7.3 Install Indoor Unit

7.3.1 Installation of Mounting Plate

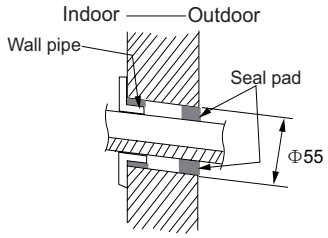
1. Mounting plate should be installed horizontally. As the water tray's outlet for the indoor unit is two-way type, during installation, the indoor unit should slightly slant to water tray's outlet for smooth drainage of condensate.
2.Fix the mounting plate on the wall with screws.
3.Be sure that the mounting plate has been fixed firmly enough to withstand about 60 kg. Meanwhile, the weight should be evenly shared by each screw.





7.3.2 Drill Piping Hole

1.Slant the piping hole (Φ55) on the wall slightly downward to the outdoor side.
2.Insert the piping-hole sleeve into the hole to prevent the connection piping and wiring from being damaged when passing through the hole.



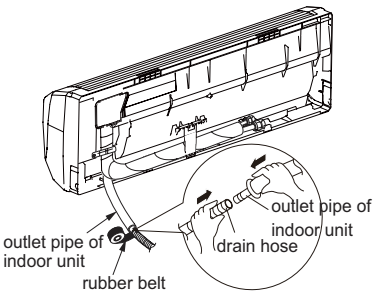
7.3.3 Installation of Drain Hose

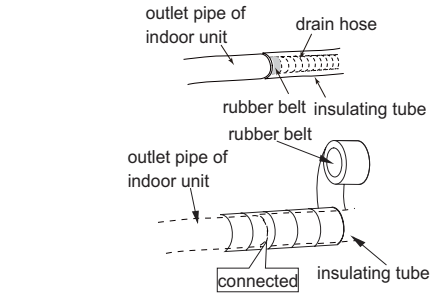
1.Connect the drain hose to the outlet pipe of the indoor unit.Bind the joint with rubber belt.

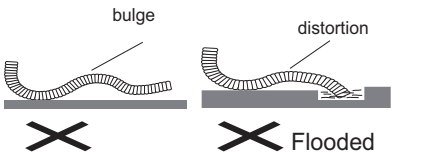
2.Put the drain hose into insulating tube.

3.Wrap the insulating tube with wide rubber belt to prevent the shift of insulating tube. Slant the drain hose downward slightly for smooth drainage of condensate.

Note:
The insulating tube should be connected reliably withthe sleve outside the outlet pipe. The drain hose should be downward slant, without distortion, bulge or fluctuation. Do not put the water outlet in the water.







7.3.4 Connecting Indoor and Outdoor Electric Wires

1.Open the front panel.
2.Remove the wiring cover connect and fix the power connection cord and signal control wire to the terminal board as shown in Fig2.
3.Make the power connection cord and signal control wire pass through the hole at the back of indoor unit.
4.Reinstall the clamp and wiring cover.
5.Recover the front panel.

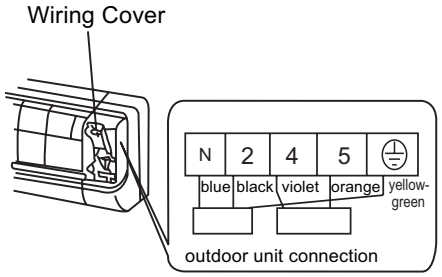


Fig 2

NOTE:
All wires between indoor and outdoor units must be connected by the qualified electric contractor.
- Electric wires must be connected correctly. Improper connection may cause malfunction.
- Tighten the terminal screws securely.
- After tightening the screws, slightly pull the wire and confirm whether it is firm or not.
- Make sure that the electric connections are earthed properly to prevent electric shock.
- Make sure that all wiring connections are secure and the cover plates are reinstalled properly. Poor installation may cause fire or electric shock.

7.3.5 Installation of Indoor Unit

- The piping can be output from right, right rear, left or left rear.

1.When routing the piping and wiring from the left or right side of indoor unit, cut off the tailings from the chassis when necessary(As shown in Fig.3)
(1)Cut off the tailing 1 when routing the wiring only;
(2)Cut off the tailing 1 and tailings 2 when routing both the wiring and piping.
2.Take out the piping from body case, wrap the piping, power cords, drain hose with the tape and make them through the piping hole. (As shown in Fig.4)
3.Hang the mounting slots of the indoor unit on theupper hooks of the mounting plate and check if it is firm enough.(As shown in Fig.5)
4.The installation site should be 250cm or more above the floor.

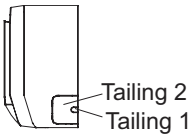
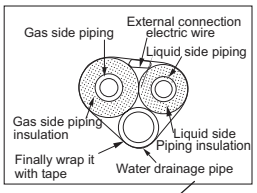


Fig.3



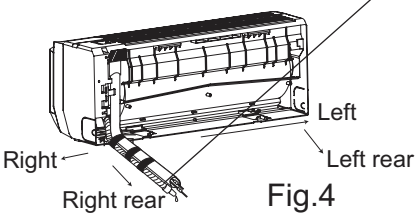


Fig.4

7.3.6 Installation of Connection Pipe

1.Align the center of the pipe flare with the relevant valve.
2.Screw in the flare nut by hand and then tighten the nut with spanner and torque wrench referring to the following:

Hex nut diameter	Tightening torque(N·m)
Φ6	15~20
Φ 9.52	31~35
Φ 12	50~55
Φ 16	60~65
Φ 19	70~75

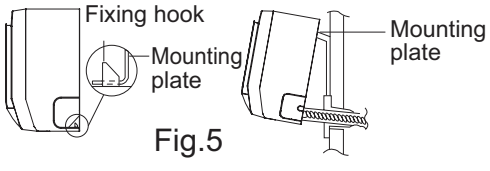
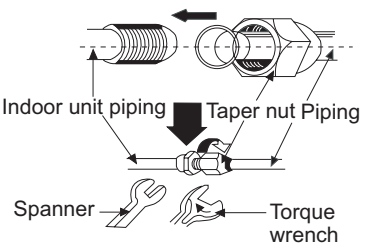


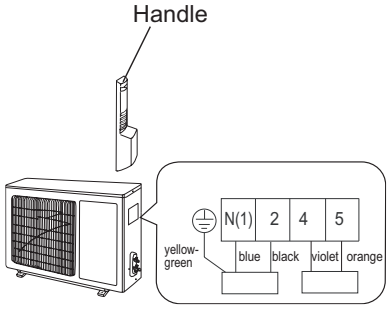
Fig.5



NOTE:
Connect the connection pipe to indoor unit at first and then to outdoor unit. Handle piping bending with care. Do not damage the connection pipe. Ensure that the joint nut is tightened firmly, otherwise, it may cause leakage.

7.4 Install Outdoor Unit

7.4.1 Electric Wiring



1. Remove the handle on the right side plate of outdoor unit.
2. Take off wire cord anchorage.Connect and fix power connection cord and signal control wire to the terminal board. Wiring should fit that of indoor unit.
3.Fix the power connection cord and signal control wire with wire clamps and then connect the corresponding connector.
4.Confirm if the wire has been fixed properly.
5. Reinstall the handle.

NOTE:

- Incorrect wiring may cause malfunction of spare part.
- After the wire has been fixed, ensure there is free space between the connection and fixing places on the lead wire.

schematic diagram being reference only, please refer to real product for authentic information.

7.4.2 Air Purging and Leakage Test

1. Connect charging hose of manifold valve to charge end of low pressurevalve (both high/ low pressure valves must be tightly shut).
2. Connect joint of charging hose to vacuum pump.
3. Fully open handle of Lo manifold valve.
4. Open the vacuum pump to evacuate. At the beginning, slightly loosenjoint nut of low pressure valve to check if there is air coming inside. (If noiseof vacuum pump has been changed, the reading of multimeter is 0) Thentighten the nut.
5. Keep evacuating for more than 15mins and make sure the reading ofmulti-meter is-1.0X10^{5}pa(-76cmHg).
6. Fully open high/low pressure valves.
7. Remove charging hose from charging end of low pressure valve.8. Tighten bonnet of low-pressure valve. (As shown in Fig.5)

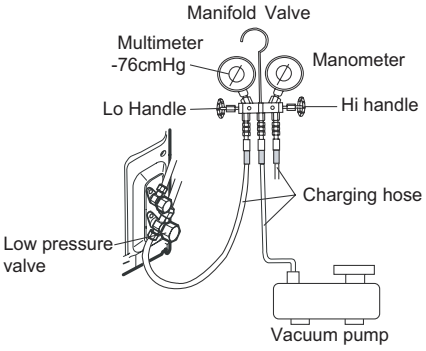
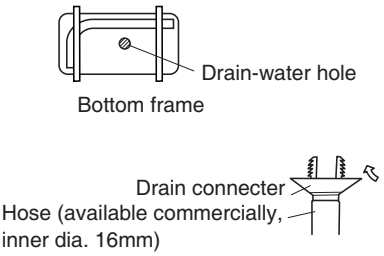


Fig.5

7.4.3 Outdoor Condensate Drainage

During heating operation, the condensate and defrosting water should be drained out reliably through the drain hose. Install the outdoor drain connector in a Ø25 hole on the base plate and attach the drain hose to the connector so that the waste water formed in the outdoor unit can be drained out .The hole diameter 25 must be plugged.

Whether to plug other holes will be determined by the dealers according to actual conditions.



7.5 Check after Installation and Operation Test

7.5.1 Check after Installation

Items to be checked	Possible malfunction
Has the unit been fixed firmly?	The unit may drop, shake or emit noise.
Have you done the refrigerant leakage test?	It may cause insufficient cooling(heating)
Is thermal insulation sufficient?	It may cause condensation.
Is water drainage satisfactory?	It may cause water leakage.
Is the voltage in accordance with the rated voltage marked on the nameplate?	It may cause electric malfunction or damage the unit.
Is the electric wiring or piping connection installed correctly and securely?	It may cause electric malfunction or damage the parts.
Has the unit been securely earthed?	It may cause electrical leakage.
Is the power cord specified?	It may cause electric malfunction or damage the parts.
Is the inlet or outlet blocked?	It may cause insufficient cooling(heating)
Is the length of connection pipes and refrigerant capacity recorded?	The refrigerant capacity is not accurate.

7.5.2 Operation Test

1. Before Operation Test
(1) Do not switch on power before installation isfinished completely.
(2) Electric wiring must be connected correctly and securely.
(3) Cut-off valves of the connection pipes should be opened.
(4) All the impurities such as scraps and thrums must be cleared from the unit.

2. Operation Test Method
(1) Switch on power, press “ON/OFF” button on the wireless remote control to start the operation.
(2) Press MODE button, to select the COOL, HEAT, FAN to check whether the operation is normal or not.

7.6 Installation and Maintenance of Healthy Filter

7.6.1 Installation of Healthy Filter

1.Lift up the front panel from its two ends,as shown by the arrow direction, and then remove the air filter.(as shown in Fig.a)

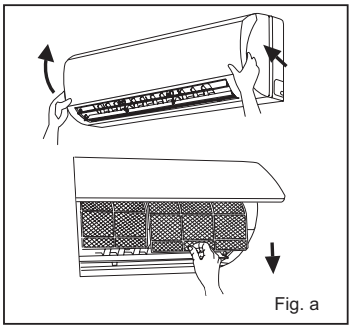


Fig. a

2. Attach the healthy filter onto the air filter,(as shown in Fig.b).

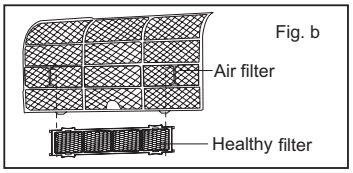


Fig. b

3. Install the air filter properly along the arrow direction in Fig.c, and then close the panel .

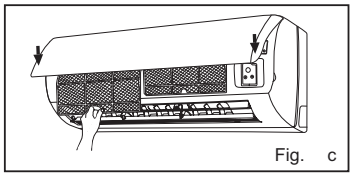


Fig. c

7.6.2 Cleaning and Maintenance

Remove the healthy filter and reinstall it after cleaning according to the installation instruction. Do not use brush or hard objects to clean the filter. After cleaning, be sure to dry it in the shade.

7.6.3 Service Life

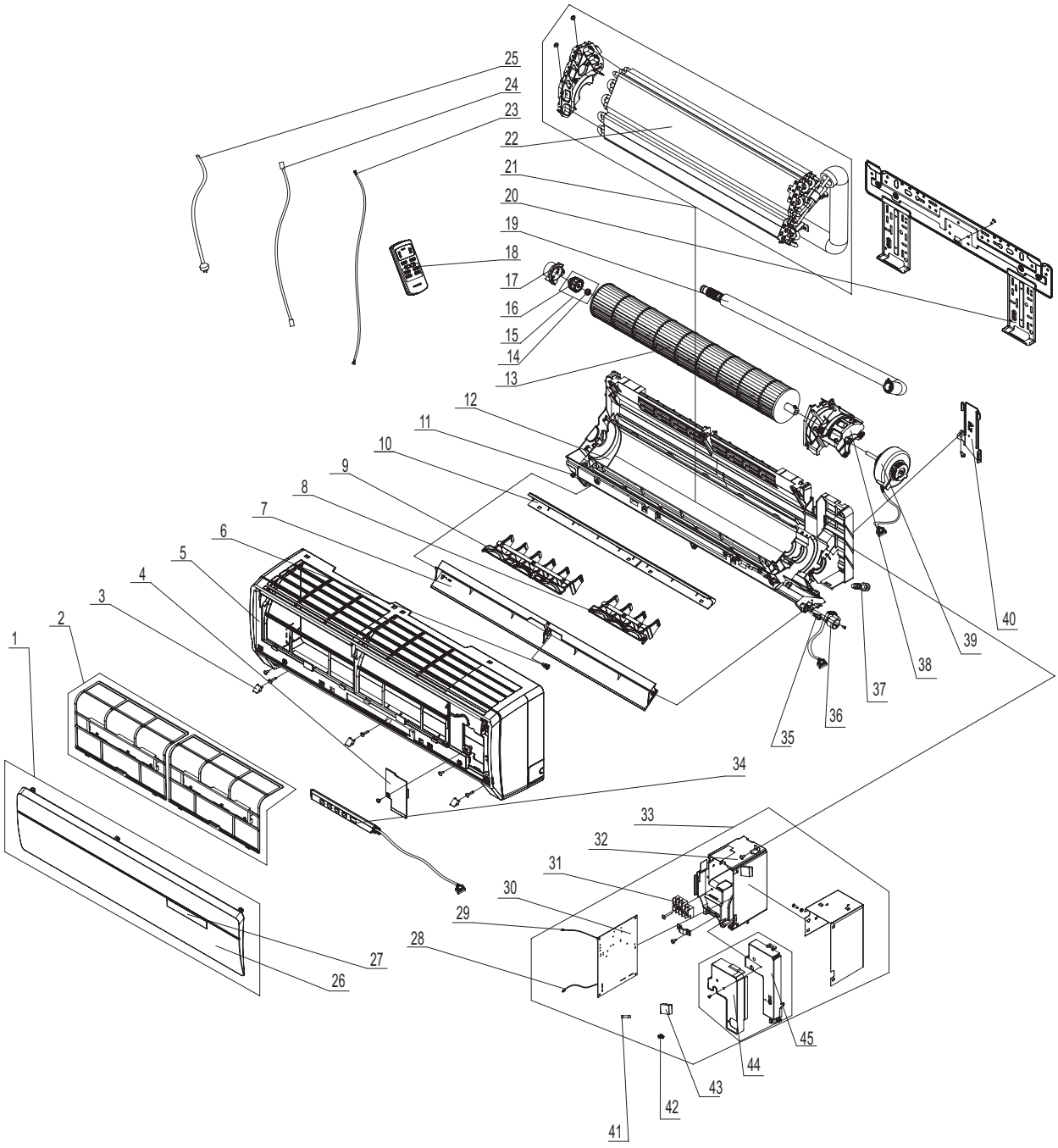
The general service life for the healthy filter is about one year under normal condition. As for silver ion filter, it is ineffective when its surface becomes black (green).

●This supplementary instruction is provided for reference to the unit with healthy filter. If the graphics provided herein are different from the actual product, please refer to the actual product. The quantity of healthy filters is based on the actual delivery.

8. Exploded Views and Parts List

8.1 Indoor Unit

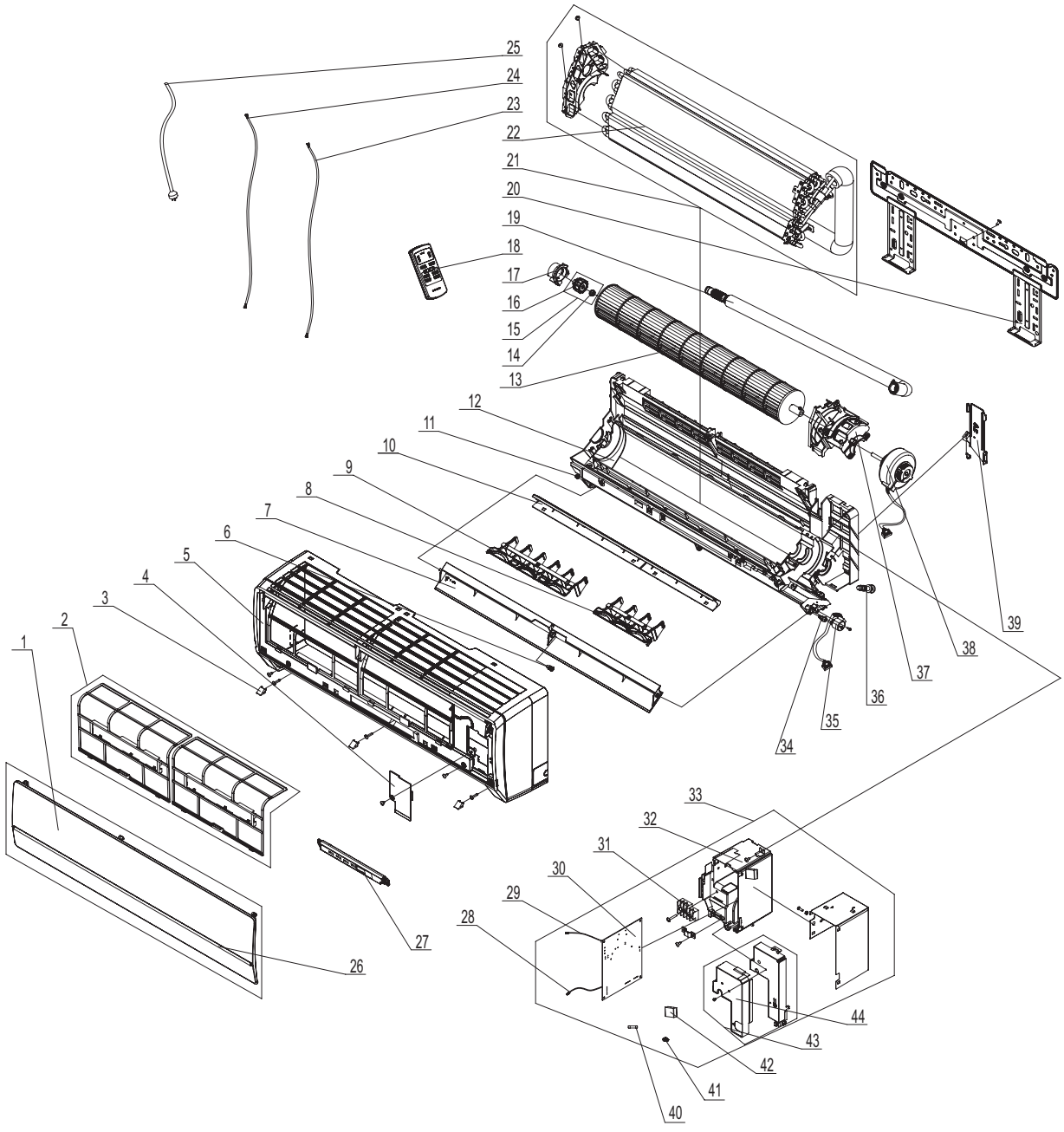
Model:GWH09NA-K3NNB1C/I



No.	Description	Part Code	Qty
		GWH09NA-K3NNB1C/I	
	Product Code	CA136N06900	
1	Front Panel Assy	20012432	1
2	Filter Sub-Assy	11122095	2
3	Screw Cover	24252016	3
4	Electric Box Cover2	20122075	1
5	Front Case	20012396	1
6	Axile Bush	10542008	1
7	Guide Louver	10512162	1
8	Air Louver 1	10512113	1
9	Air Louver 2	10512114	1
10	Helicoid tongue	26112202	1
11	Axile Bush	10542704	1
12	Rear Case assy	22202135	1
13	Cross Flow Fan	10352034	1
14	Fan Bearing	76512210	1
15	O-Gasket sub-assy of Bearing	76512051	1
16	O-Gasket of Cross Fan Bearing	76512203	1
17	Ring of Bearing	26152022	1
18	Remote Controller	30510065	1
19	Drainage hose	0523001408	1
20	Wall Mounting Frame	01252231	1
21	Evaporator Assy	0100257702	1
22	Evaporator Sub-Assy	01032915	1
23	Connecting Cable	40020540	0
24	Connecting Cable	40020536	0
25	Power Cord	400220113	1
26	Front panel B1	20012395S	1
27	Decorative Strip	20192319	1
28	Tube Sensor	390000591	1
29	Ambient Temperature Sensor	390000453	1
30	Main Board	30135353	1
31	Terminal Board	42010262	1
32	Electric Box	20112091	1
33	Electric Box Assy	20202233	1
34	Display Board	30565062	1
35	Crank	10582070	1
36	Step Motor	1521210801	1
37	Rubber Plug (Water Tray)	76712012	1
38	Motor Press Plate	26112201	1
39	Fan Motor	15012115	1
40	Pipe Clamp	26112199	1
41	Fuse	46010055	1
42	Jumper	4202300114	1
43	Capacitor CBB61	33010002	1
44	Shield box (electric box)	01592080	1
45	Electric Box Cover	20122114	1

The data above are subject to change without notice.

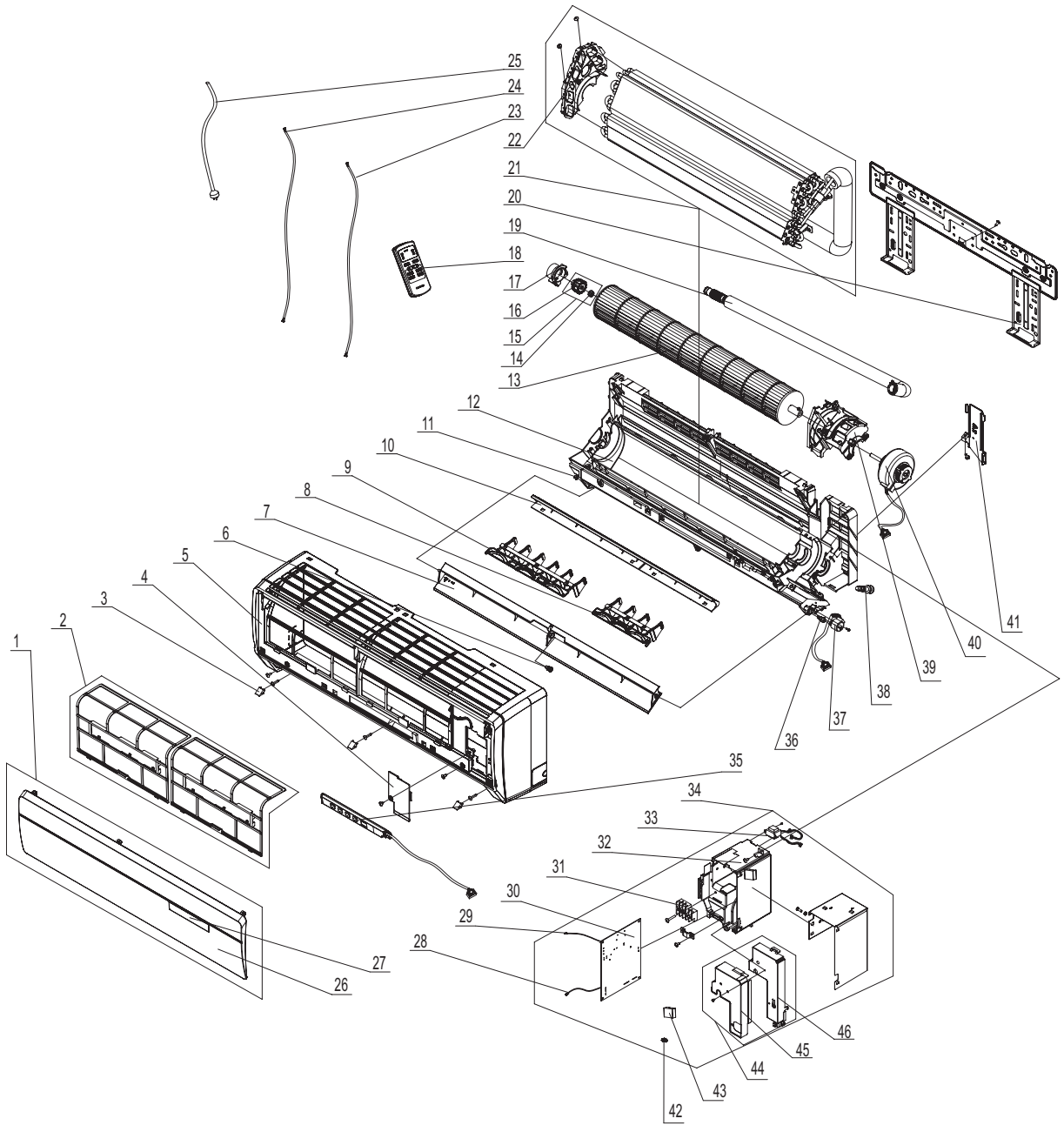
Model:GWH09NA-K3NNA9C/I



No.	Description	Part Code	Qty
		GWH09NA-K3NNA9C/I	
	Product Code	CA182N02800	
1	Front Panel Assy	20012900	1
2	Filter Sub-Assy	11122095	2
3	Screw Cover	24252016	3
4	Electric Box Cover2	20122075	1
5	Front Case	20012396	1
6	Axile Bush	10542008	1
7	Guide Louver	10512162	1
8	Air Louver 1	10512113	1
9	Air Louver 2	10512114	1
10	Helicoid Tongue	26112202	1
11	Axile Bush	10542704	1
12	Rear Case assy	22202135	1
13	Cross Flow Fan	10352034	1
14	Fan Bearing	76512210	1
15	O-Gasket sub-assy of Bearing	76512051	1
16	O-Gasket of Cross Fan Bearing	76512203	1
17	Ring of Bearing	26152022	1
18	Remote Controller	30510065	1
19	Drainage Hose	0523001408	1
20	Wall Mounting Frame	01252231	1
21	Evaporator Assy	0100257702	1
22	Evaporator Sub-Assy	01032915	1
23	Connecting Cable	40020540	0
24	Connecting Cable	40020536	0
25	Power Cord	400220113	1
26	Decorative Strip	20192468K	1
27	Display Board	30565018	1
28	Tube Sensor	390000591	1
29	Ambient Temperature Sensor	390000453	1
30	Main Board	30135353	1
31	Terminal Board	42010262	1
32	Electric Box	20112091	1
33	Electric Box Assy	2020223339	1
34	Crank	10582070	1
35	Step Motor	1521210801	1
36	Rubber Plug (Water Tray)	76712012	1
37	Motor Press Plate	26112201	1
38	Fan Motor	15012115	1
39	Pipe Clamp	26112199	1
40	Fuse	46010055	1
41	Jumper	4202300114	1
42	Capacitor CBB61	33010002	1
43	ShieldBox (Electric Box)	01592080	1
44	Electric Box Cover	20122114	1

The data above are subject to change without notice.

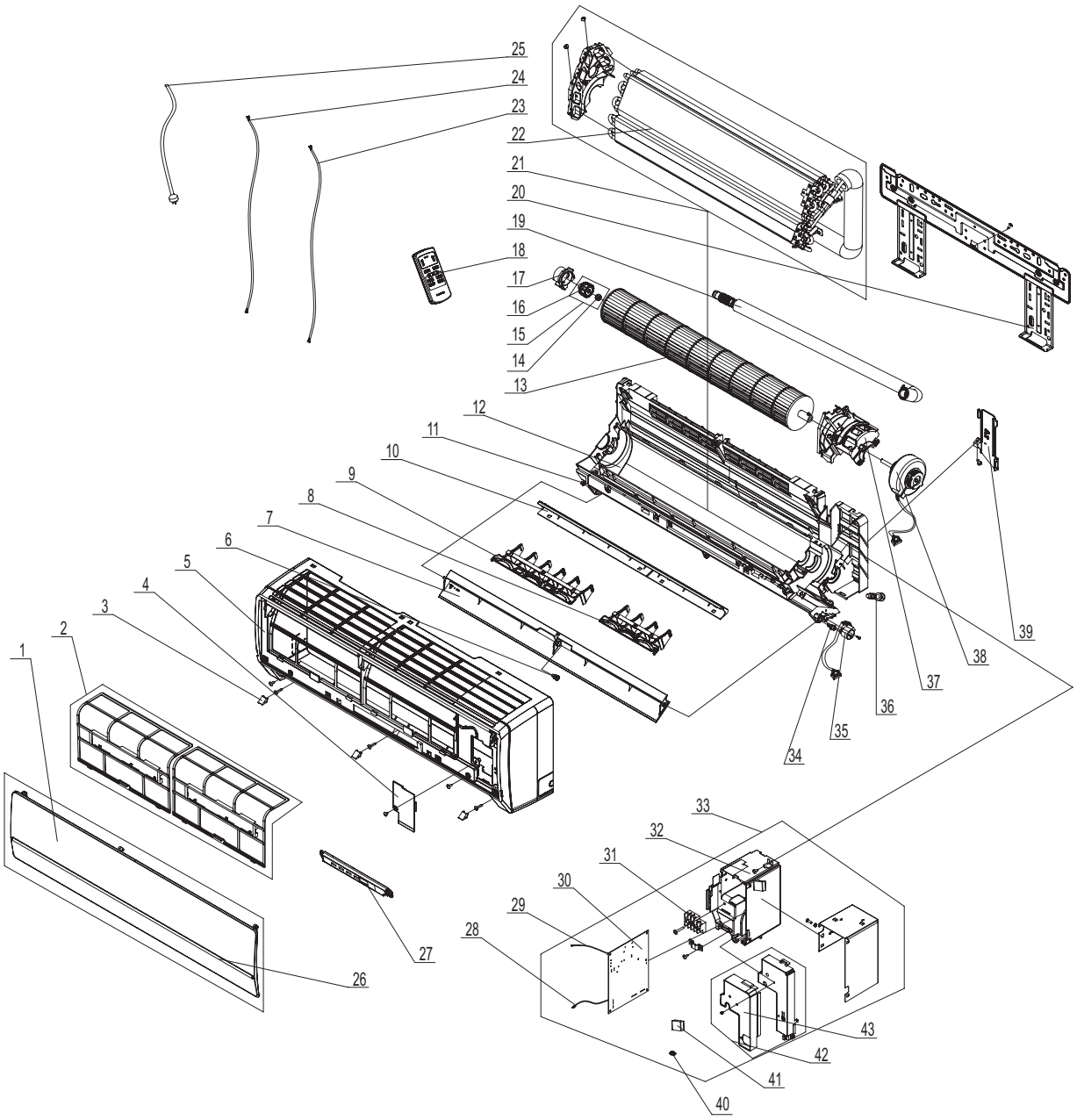
Model:GWH12NB-K3NNB1C/I



No.	Description	Part Code	Qty
		GWH12NB-K3NNB1C/I	
	Product Code	CA136N07000	
1	Front Panel Assy	20012420	1
2	Filter Sub-Assy	11122081	2
3	Screw Cover	24252016	3
4	Electric Box Cover2	20122075	1
5	Front Case	20012179	1
6	Axile Bush	10542704	1
7	Guide Louver	10512111	1
8	Air Louver 1	10512113	1
9	Air Louver 2	10512114	1
10	Helicoid Tongue	26112162	1
11	Axile Bush	10542704	1
12	Rear Case assy	2220210101	1
13	Cross Flow Fan	10352018	1
14	Fan Bearing	76512210	1
15	O-Gasket sub-assy of Bearing	76512051	1
16	O-Gasket of Cross Fan Bearing	76512203	1
17	Ring of Bearing	26152022	1
18	Remote Controller	30510065	1
19	Drainage Hose	0523001406	1
20	Wall Mounting Frame	01252015	1
21	Evaporator Assy	0100255202	1
22	Evaporator Support	24212090	1
23	Connecting Cable	40020540	0
24	Connecting Cable	40020536	0
25	Power Cord	4002046413	1
26	Front Panel B1	20012344S	1
27	Receiver Window	22432508	1
28	Tube Sensor	390000591	1
29	Ambient Temperature Sensor	390000453	1
30	Main Board	30135283	1
31	Terminal Board	42010262	1
32	Electric Box	20112082	1
33	Transformer	43110236	1
34	Electric Box Assy	20202200	1
35	Display Board	30565062	1
36	Crank	10542008	1
37	Step Motor	1521210801	1
38	Rubber Plug (Water Tray)	76712012	1
39	Motor Press Plate	26112160	1
40	Fan Motor	15012115	1
41	Pipe Clamp	26112164	1
42	Jumper	4202300128	1
43	Capacitor CBB61	33010002	1
44	Shield Cover of Electric Box Sub-assy	0159207301	1
45	Shield Cover of Electric Box	0141203601	1
46	Electric Box Cover1	20122103	1

The data above are subject to change without notice.

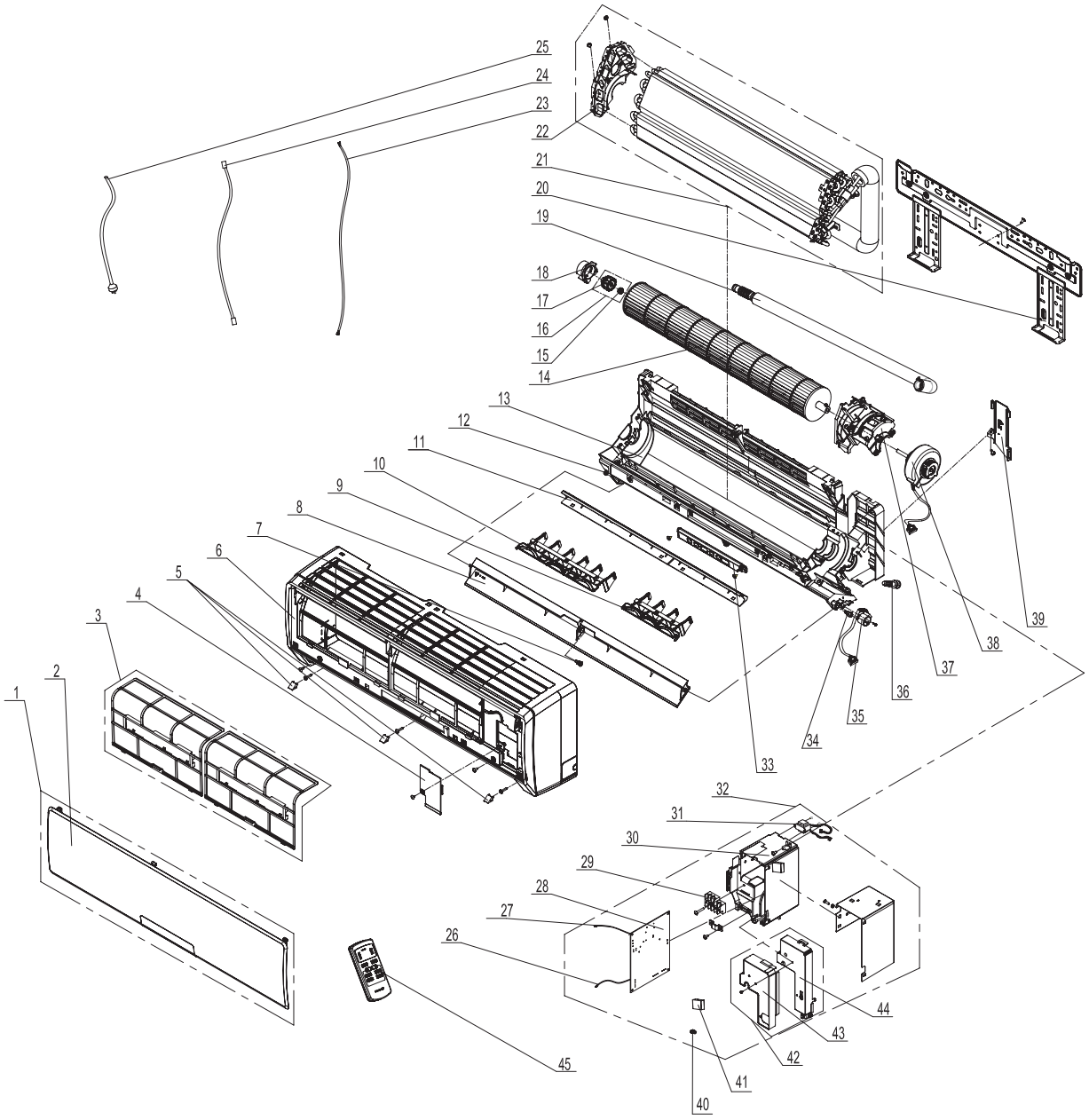
Model:GWH12NB-K3NNA9C/I



No.	Description	Part Code	Qty
		GWH12NB-K3NNA9C/I	
	Product Code	CA182N02900	
1	Front Panel Assy	2001222601	1
2	Filter Sub-Assy	11122081	2
3	Screw Cover	24252016	3
4	Electric Box Cover2	20122075	1
5	Front Case	20012179	1
6	Axile Bush	10542008	1
7	Guide Louver	10512111	1
8	Air Louver 1	10512113	1
9	Air Louver 2	10512114	1
10	Helicoid Tongue	26112162	1
11	Axile Bush	10542704	1
12	Rear Case assy	2220210101	1
13	Cross Flow Fan	10352043	1
14	Fan Bearing	76512210	1
15	O-Gasket sub-assy of Bearing	76512051	1
16	O-Gasket of Cross Fan Bearing	76512203	1
17	Ring of Bearing	26152022	1
18	Remote Controller	30510065	1
19	Drainage Hose	0523001406	1
20	Wall Mounting Frame	01252015	1
21	Evaporator Assy	0100255202	1
22	Evaporator Sub-Assy	01032564	1
23	Connecting Cable	40020540	0
24	Connecting Cable	40020536	0
25	Power Cord	4002046413	1
26	Decorative Strip	20192242K	1
27	Display Board	30565018	1
28	Tube Sensor	390000591	1
29	Ambient Temperature Sensor	390000453	1
30	Main Board	30135283	1
31	Terminal Board	42010262	1
32	Electric Box	20112082	1
33	Electric Box Assy	2020220001	1
34	Crank	10582070	1
35	Step Motor	1521212901	1
36	Rubber Plug (Water Tray)	76712012	1
37	Motor Press Plate	26112160	1
38	Fan Motor	15012115	1
39	Pipe Clamp	26112164	1
40	Jumper	4202300128	1
41	Capacitor CBB61	33010002	1
42	ShieldBox (Electric Box)	01592072	1
43	Electric Box Cover	20122103	1

The data above are subject to change without notice.

Model:GWH12NB-K3NNA3C/I

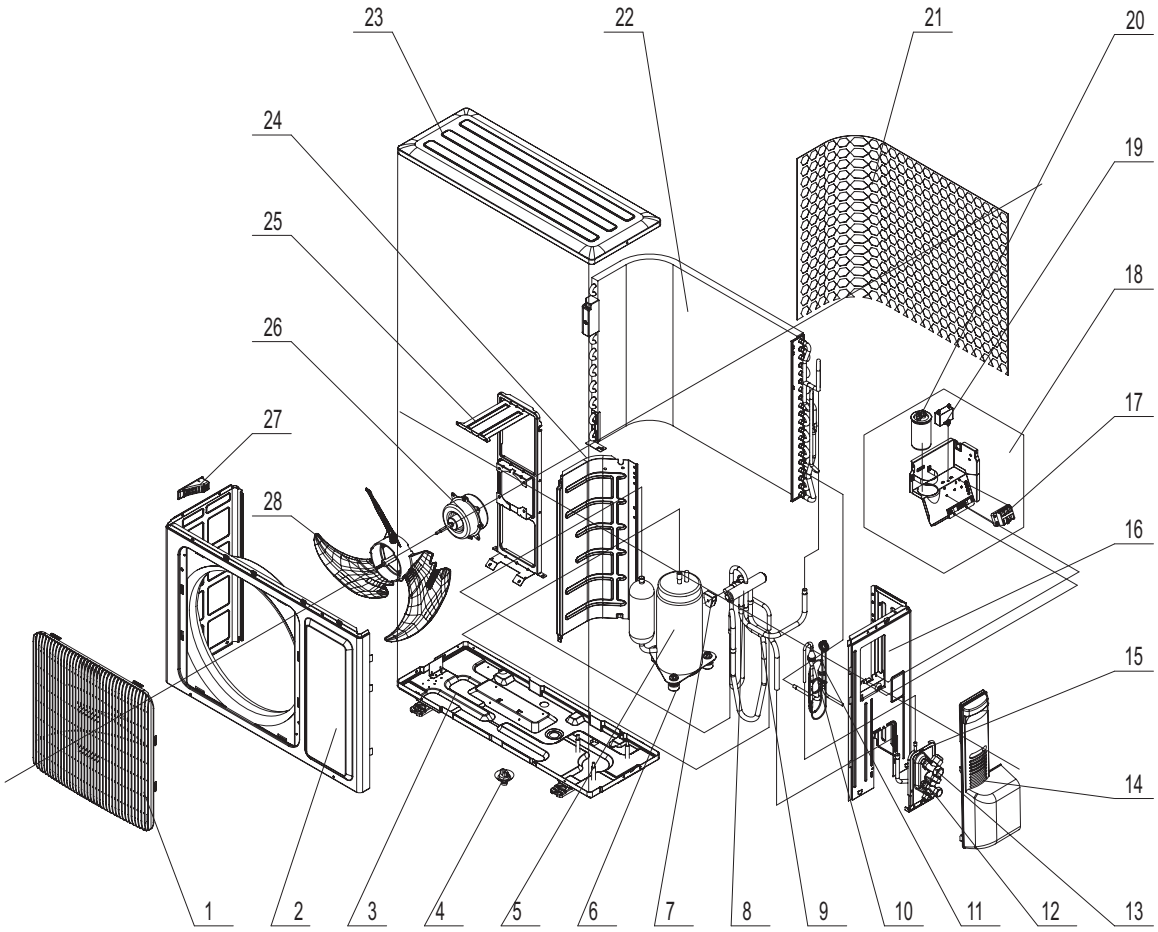


No.	Description	Part Code	Qty
		GWH12NB-K3NNA3C/I	
	Product Code	CA171N12600	
1	Front Panel Assy	20012241	1
2	Front panel B1	20012121S	1
3	Filter Sub-Assy	11122081	2
4	Electric Box Cover2	20122075	1
5	Screw Cover	24252016	3
6	Front Case	20012120	1
7	Axile Bush	10542008	1
8	Guide Louver	10512111	1
9	Air Louver 1	10512113	1
10	Air Louver 2	10512114	1
11	Helicoid Tongue	26112162	1
12	Axile Bush	10542008	1
13	Rear Case assy	2220210101	1
14	Cross Flow Fan	10352018	1
15	Fan Bearing	76512210	1
16	O-Gasket sub-assy of Bearing	76512051	1
17	O-Gasket of Cross Fan Bearing	76512203	1
18	Ring of Bearing	26152022	1
19	Drainage hose	0523001406	1
20	Wall Mounting Frame	01252015	1
21	Evaporator Assy	0100255202	1
22	Evaporator Support	24212090	1
23	Connecting Cable	40020540	0
24	Connecting Cable	40020536	0
25	Power Cord	4002046413	1
26	Temperature Sensor	390000597	1
27	Ambient Temperature Sensor	390000453	1
28	Main Board	30135283	1
29	Terminal Board	42010262	1
30	Electric Box	20112082	1
31	Transformer	43110236	1
32	Electric Box Assy	20202169	1
33	Display Board	30565007	1
34	Crank	10582070	1
35	Step Motor	1521212901	1
36	Rubber Plug (Water Tray)	76712012	1
37	Motor Press Plate	26112160	1
38	Fan Motor	15012115	1
39	Pipe Clamp	26112164	1
40	Jumper	4202300128	1
41	Capacitor CBB61	33010002	1
42	Shield cover of Electric Box sub-assy	0159207301	1
43	Shield cover of Electric Box	0141203601	1
44	Electric Box Cover1	20122103	1
45	Remote Controller	30510065	1

The data above are subject to change without notice.

8.2 Outdoor Unit

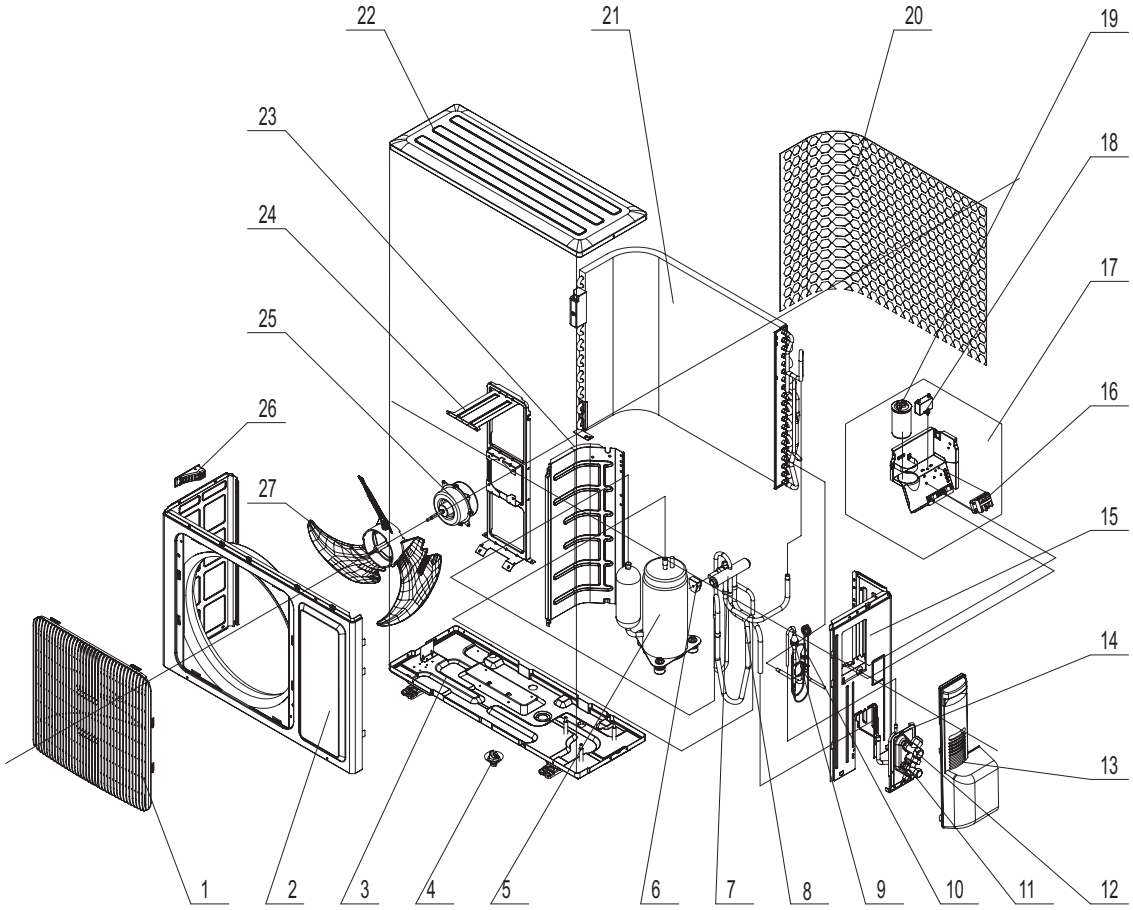
Model:GWH09NA-K3NNB1C/O



No.	Description	Part Code	Qty
		GWH09NA-K3NNB1C/O	
	Product Code	CA136W06900	
1	Front grill	22413433	1
2	Front Panel	01533029P	1
3	Chassis Sub-assy	01203748P	1
4	Drainage Connecter	06123401	1
5	Compressor and Fittings	00103804	1
6	Compressor Gasket	76710247	3
7	Magnet Coil	430004002	1
8	4-Way Valve Assy	03123646	1
9	4-way Valve	430004022	1
10	StrainerA	07210022	1
11	Capillary Sub-assy	03063533	1
12	Valve	07100005	1
13	Valve	07100003	1
14	Big Handle	26233433	1
15	Valve Support	0170308901P	1
16	Right Side Plate Sub-Assy	01303183	1
17	Terminal Board	42010265	1
18	Electric Box Assy	02603599	1
19	Capacitor CBB61	33010026	1
20	Capacitor CBB65	33000017	1
21	Rear grill	1112320501	1
22	Condenser Assy	01163041	1
23	Top Cover Sub-Assy	01253031	1
24	Clapboard Sub-Assy	01233066	1
25	Motor Support Sub-Assy	01703097Y	1
26	Fan Motor	150130671	1
27	Small Handle	26233100	1
28	Axial Flow Fan	10333427	1

The data above are subject to change without notice.

Model:GWH12NB-K3NNB1C/O



No.	Description	Part Code	Qty
		GWH12NB-K3NNB1C/O	
	Product Code	CA136W07000	
1	Front Grill	22413433	1
2	Front Panel	01533029P	1
3	Chassis Sub-assy	01203767P	1
4	Drainage Connecter	06123401	1
5	Compressor and Fittings	00103281	1
6	Magnet Coil	430004002	1
7	4-Way Valve Assy	03123642	1
8	4-Way Valve	430004032	1
9	StrainerA	07210022	1
10	Capillary Sub-assy	03103997	1
11	Valve	07100005	1
12	Valve	07100003	1
13	Big Handle	26233433	1
14	Valve Support	0170308901P	1
15	Right Side Plate Sub-Assy	01303183	1
16	Terminal Board	42010265	1
17	Electric Box Assy	02603597	1
18	Capacitor CBB61	33010026	1
19	Capacitor CBB65	33010743	1
20	Rear Grill	1112320501	1
21	Condenser Assy	01163034	1
22	Top Cover Sub-Assy	01253031	1
23	Clapboard Sub-Assy	01233066	1
24	Motor Support Sub-Assy	01703052	1
25	Fan Motor	150130676	1
26	Small Handle	26233100	1
27	Axial Flow Fan	10333427	1

The data above are subject to change without notice.

9. Troubleshooting

9.1 Precautions before Performing Inspection or Repair

Be cautious during installation and maintenance. Do operation following the regulations to avoid electricshock and casualty oreven death due to drop from high attitude.

* Static maintenance is the maintenance during de-energization of the air conditioner.

For static maintenance, make sure that the unit is de-energized and the plug is disconnected.

* dynamic maintenance is the maintenance during energization of the unit.Before dynamic maintenance, check the electricity and ensure that there is ground wire on the site.

Check if there is electricity on the housing and connection copper pipe of the air conditioner with voltage tester. After ensure insulation placeand the safety, the maintenance can be performed.

Take sufficient care to avoid directly touching any of the circuit parts without first turning off the power.

At times such as when the circuit board is to be replaced, place the circuit board assembly in a vertical position.

Normally,diagnose troubles according to the trouble diagnosis procedure as described below.(Refer to the check points in servicing written on the wiring diagrams attached to the indoor/outdoor units.)

No.	Troubleshooting Procedure
1	Confirmation
2	Judgement by Flashing LED of Indoor/Outdoor Unit
3	How to Check Simply the Main Part

Precautions when inspecting the control section of the outdoor unit:

A large-capacity electrolytic capacitor is used in the outdoor unit controller(inverter).Therefore,if the power supply is turned off,charge (charging voltage DC220V to 240V)remains and discharging takes a lot of time. After turning off the power source,if touching the charging section before discharging, an electrical shock may be caused.

9.2 Confirmation

(1)Confirmation of Power Supply

Confirm that the power breaker operates(ON) normally;

(2)Confirmation of Power Voltage

Confirm that power voltage is AC 220–230–240 ± 10%.

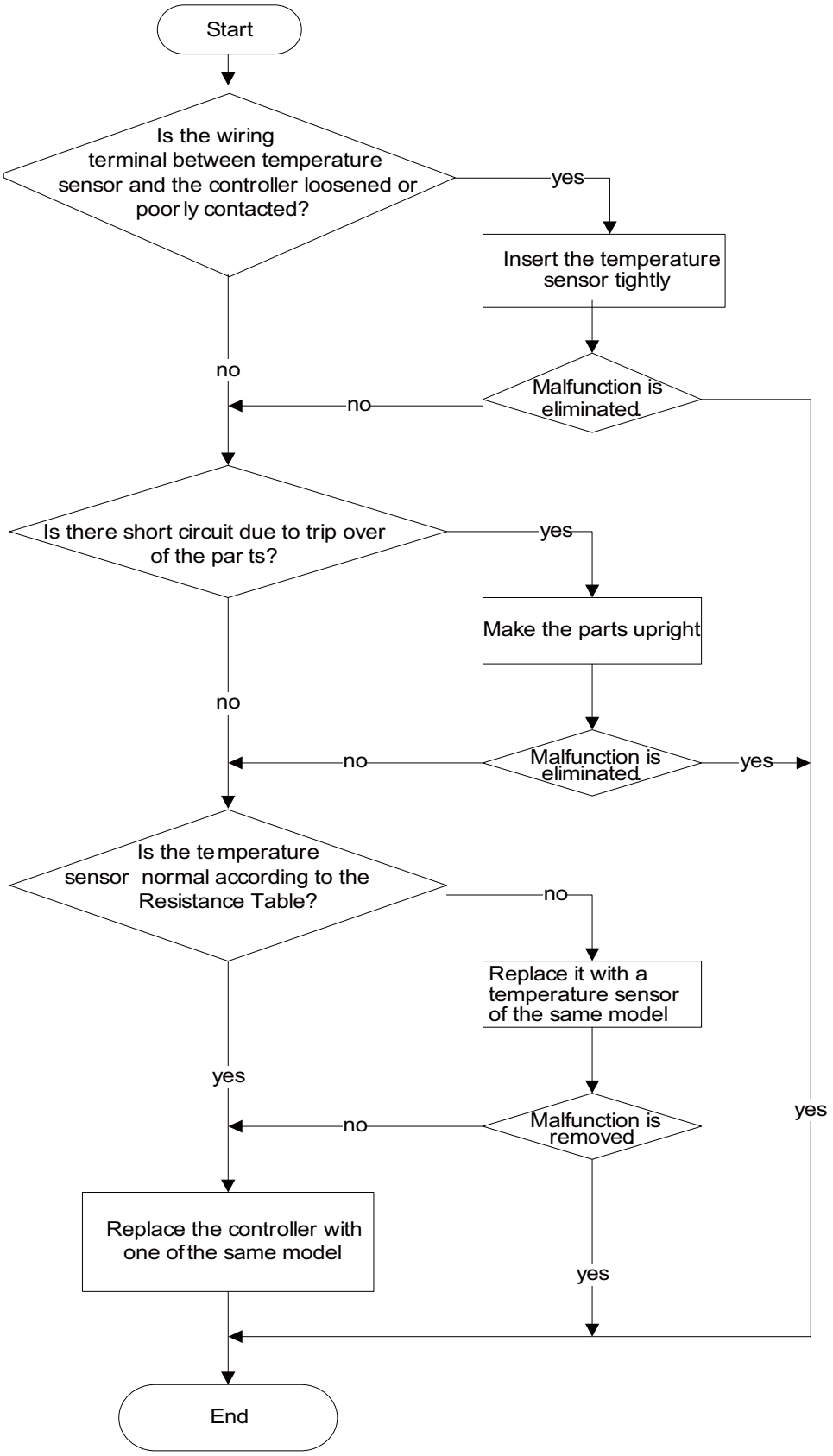
If power voltage is not in this range, the unit may not operate normally.

9.3 Judgement by Flashing LED of Indoor/Outdoor Unit

No.	Malfunction Name	Display Method of Indoor Unit				A/C Status	Possible Causes
		Error Code	Indicator lamp (During blinking, ON for 0.5S and OFF for 0.5 S)				
			Operation Lamp	COOL Lamp	HEAT Lamp		
1	Indoor ambient temperature sensor is open/ short- circuited	F1		OFF 3S and blinks once		The unit will stop operation as it reaches the temperature point. During cooling and drying operation, except indoor fan operates, other loads（such as compressor, outdoor fan, 4-way valve） stop operation; During heating operation, the complete unit stops operation.	1. The wiring terminal between indoor ambient temperature sensor and controller is loosened or poorly contacted; 2. There's short circuit due to trip-over of the parts on controller; 3.Indoor ambient temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor) 4. Main board is broken.
2	Indoor evaporator temperature sensor is open/ short-circuited	F2		OFF 3S and blinks twice		The unit will stop operation as it reaches the temperature point. During cooling and drying operation, except indoor fan operates, other loads stop operation; During heating operation, the complete unit stops operation.	1. The wiring terminal between indoor evaporator temperature sensor and controller is loosened or poorly contacted; 2. There's short circuit due to the trip-over of the parts on controller; 3.Indoor evaporator temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor) 4. Main board is broken.
3	PG motor (indoor fan motor) does not operate	H6	OFF 3S and blinks 11 times			Indoor fan, outdoor fan, compressor and electric heat tube stop operation. 2 minutes later, 4-way valve stops; horizontal louver stops at the current position.	1. The feedback terminal of PG motor is not connected tightly. 2. The control terminal of PG motor is not connected tightly. 3. Fan blade rotates unsmoothly due to improper installation. 4. Motor is not installed properly and tightly. 5. Motor is damaged. 6. Controller is damaged.
4	Malfunction protection of jumper cap	C5	OFF 3S and blinks 15 times			Operation of remote controller or control panel is available, but the unit won't act.	1. There's not jumper cap on the controller. 2. Jumper cap is not inserted properly and tightly. 3. Jumper cap is damaged. 4. Controller is damaged.
5	PG motor (indoor fan) circuit malfunction by zero cross detection	U8	OFF 3S and blinks 17 times			Operation of remote controller or control panel is available, but the unit won't act.	1. Controller is damaged.

9.4 How to Check Simply the Main Part

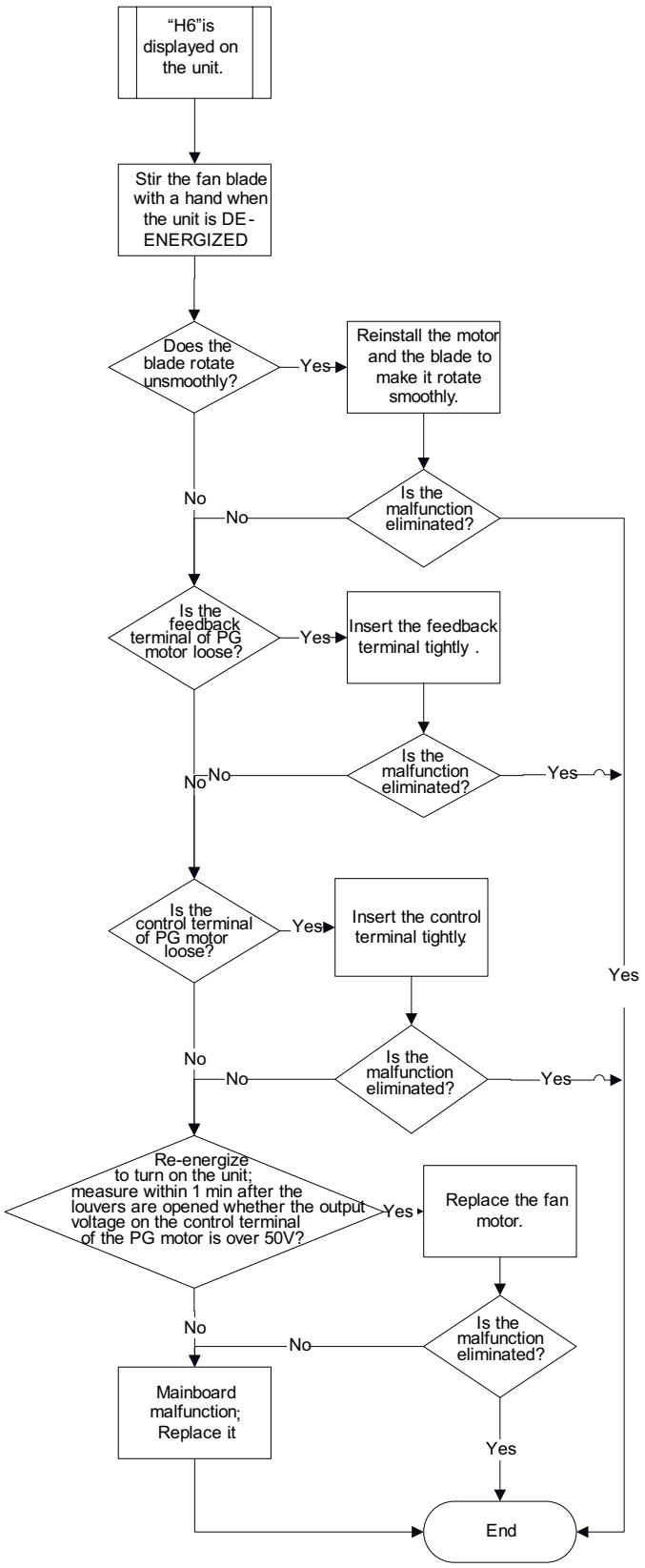
(1)F1/F2 Malfunction



(2)H6 Malfunction

Possible causes:
1. Fan motor is locked;
2. The feedback terminal of PG motor is not connected tightly;
3. The control terminal of PG motor is not connected tightly;
4. Motor is damaged;
5. Malfunction of the rotation speed detection circuit of the mainboard.

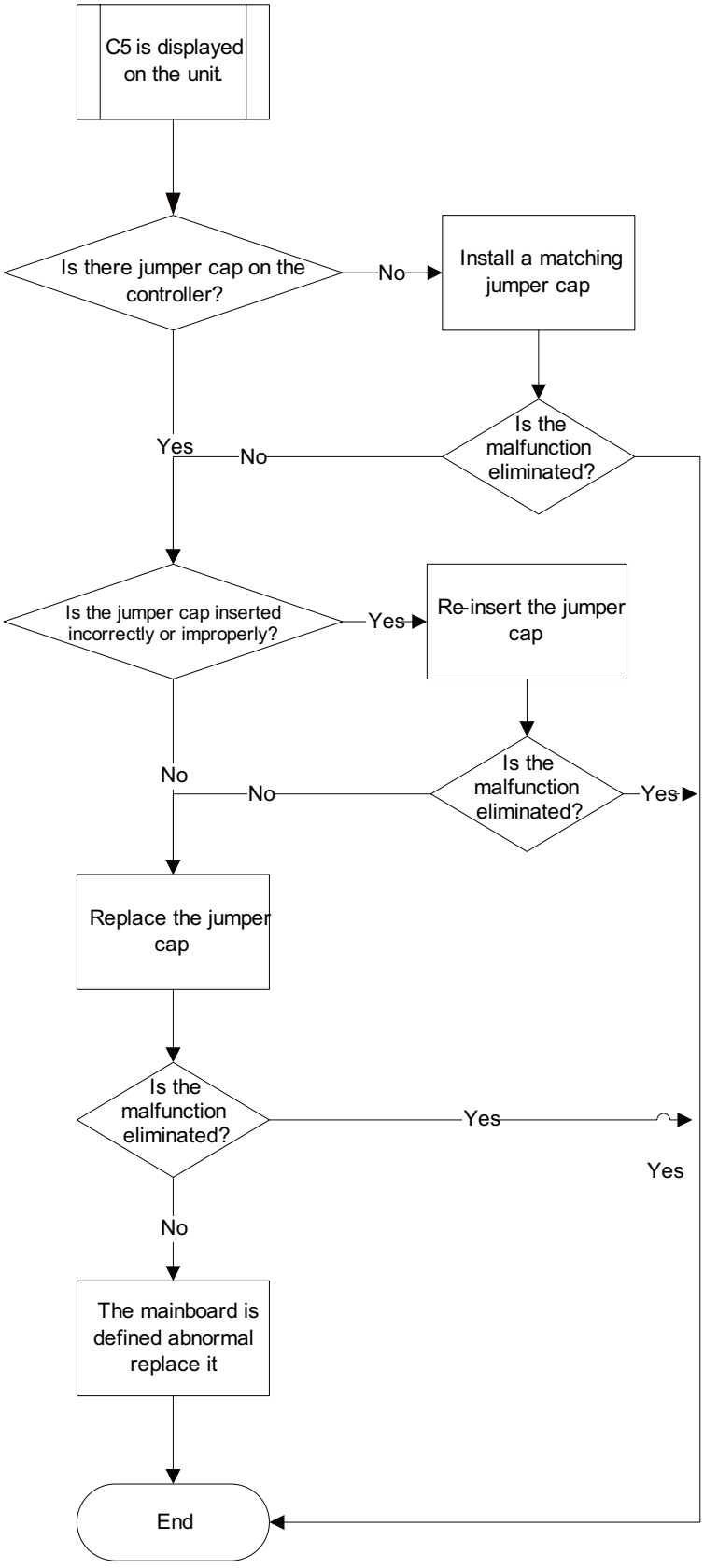
See the flow chart below:


"H6"is displayed on the unit.
Stir the fan blade with a hand when the unit is DE-ENERGIZED
Does the blade rotate unsmoothly?
Yes
Reinstall the motor and the blade to make it rotate smoothly.
No
Is the malfunction eliminated?
No
Is the feedback terminal of PG motor loose?
Yes
Insert the feedback terminal tightly .
No
Is the malfunction eliminated?
No
Yes
Is the control terminal of PG motor loose?
Yes
Insert the control terminal tightly.
Yes
No
Is the malfunction eliminated?
No
Yes
Re-energize to turn on the unit; measure within 1 min after the louvers are opened whether the output voltage on the control terminal of the PG motor is over 50V?
Yes
Replace the fan motor.
No
Is the malfunction eliminated?
No
Mainboard malfunction; Replace it
Yes
End

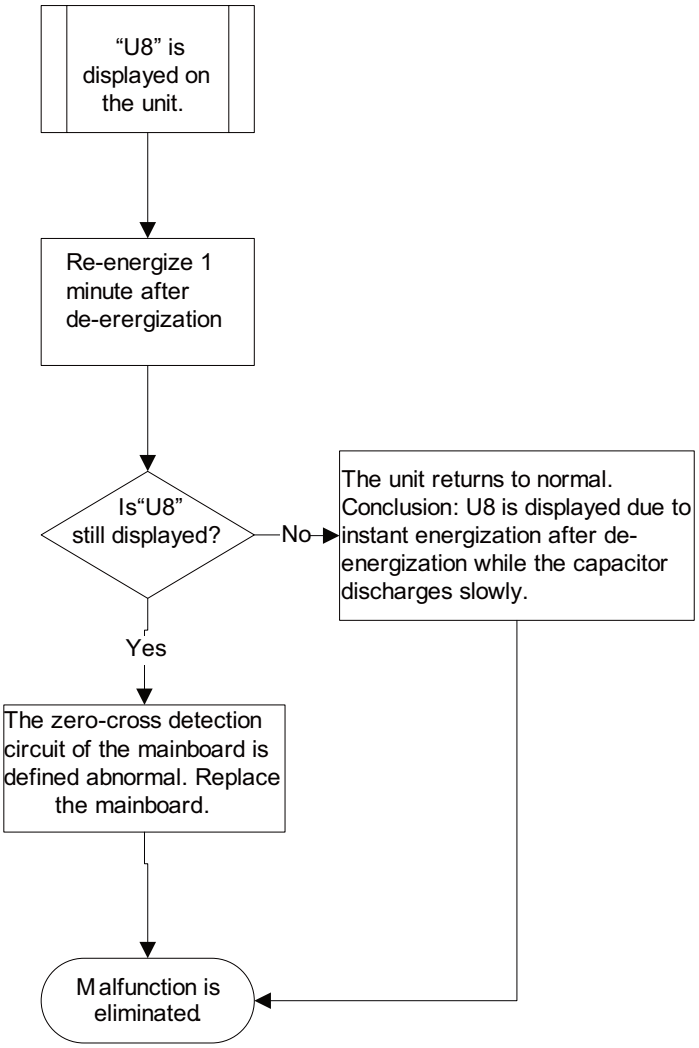
(3)C5 Malfunction

Possible causes:
1. There is no jumper cap on the controller;
2. Jumper cap is not inserted properly and tightly;
3. Jumper cap is damaged;
4. Controller is damaged.

See the flow chart below:



(4)U8 Malfunction


"U8" is displayed on the unit.
Re-energize 1 minute after de-erergization
Is"U8" still displayed?
No
The unit returns to normal. Conclusion: U8 is displayed due to instant energization after de-energization while the capacitor discharges slowly.
Yes
The zero-cross detection circuit of the mainboard is defined abnormal. Replace the mainboard.
Malfunction is eliminated.

Appendix

Appendix 1: Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(15K)

Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)
-19	138.1		20	18.75		59	3.848		98	1.071
-18	128.6		21	17.93		60	3.711		99	1.039
-17	121.6		22	17.14		61	3.579		100	1.009
-16	115		23	16.39		62	3.454		101	0.98
-15	108.7		24	15.68		63	3.333		102	0.952
-14	102.9		25	15		64	3.217		103	0.925
-13	97.4		26	14.36		65	3.105		104	0.898
-12	92.22		27	13.74		66	2.998		105	0.873
-11	87.35		28	13.16		67	2.896		106	0.848
-10	82.75		29	12.6		68	2.797		107	0.825
-9	78.43		30	12.07		69	2.702		108	0.802
-8	74.35		31	11.57		70	2.611		109	0.779
-7	70.5		32	11.09		71	2.523		110	0.758
-6	66.88		33	10.63		72	2.439		111	0.737
-5	63.46		34	10.2		73	2.358		112	0.717
-4	60.23		35	9.779		74	2.28		113	0.697
-3	57.18		36	9.382		75	2.206		114	0.678
-2	54.31		37	9.003		76	2.133		115	0.66
-1	51.59		38	8.642		77	2.064		116	0.642
0	49.02		39	8.297		78	1.997		117	0.625
1	46.6		40	7.967		79	1.933		118	0.608
2	44.31		41	7.653		80	1.871		119	0.592
3	42.14		42	7.352		81	1.811		120	0.577
4	40.09		43	7.065		82	1.754		121	0.561
5	38.15		44	6.791		83	1.699		122	0.547
6	36.32		45	6.529		84	1.645		123	0.532
7	34.58		46	6.278		85	1.594		124	0.519
8	32.94		47	6.038		86	1.544		125	0.505
9	31.38		48	5.809		87	1.497		126	0.492
10	29.9		49	5.589		88	1.451		127	0.48
11	28.51		50	5.379		89	1.408		128	0.467
12	27.18		51	5.197		90	1.363		129	0.456
13	25.92		52	4.986		91	1.322		130	0.444
14	24.73		53	4.802		92	1.282		131	0.433
15	23.6		54	4.625		93	1.244		132	0.422
16	22.53		55	4.456		94	1.207		133	0.412
17	21.51		56	4.294		95	1.171		134	0.401
18	20.54		57	4.139		96	1.136		135	0.391
19	19.63		58	3.99		97	1.103		136	0.382

Appendix 2: Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(20K)

Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)		Temp(℃)	Resistance(kΩ)
-19	181.4		20	25.01		59	5.13		98	1.427
-18	171.4		21	23.9		60	4.948		99	1.386
-17	162.1		22	22.85		61	4.773		100	1.346
-16	153.3		23	21.85		62	4.605		101	1.307
-15	145		24	20.9		63	4.443		102	1.269
-14	137.2		25	20		64	4.289		103	1.233
-13	129.9		26	19.14		65	4.14		104	1.198
-12	123		27	18.13		66	3.998		105	1.164
-11	116.5		28	17.55		67	3.861		106	1.131
-10	110.3		29	16.8		68	3.729		107	1.099
-9	104.6		30	16.1		69	3.603		108	1.069
-8	99.13		31	15.43		70	3.481		109	1.039
-7	94		32	14.79		71	3.364		110	1.01
-6	89.17		33	14.18		72	3.252		111	0.983
-5	84.61		34	13.59		73	3.144		112	0.956
-4	80.31		35	13.04		74	3.04		113	0.93
-3	76.24		36	12.51		75	2.94		114	0.904
-2	72.41		37	12		76	2.844		115	0.88
-1	68.79		38	11.52		77	2.752		116	0.856
0	65.37		39	11.06		78	2.663		117	0.833
1	62.13		40	10.62		79	2.577		118	0.811
2	59.08		41	10.2		80	2.495		119	0.77
3	56.19		42	9.803		81	2.415		120	0.769
4	53.46		43	9.42		82	2.339		121	0.746
5	50.87		44	9.054		83	2.265		122	0.729
6	48.42		45	8.705		84	2.194		123	0.71
7	46.11		46	8.37		85	2.125		124	0.692
8	43.92		47	8.051		86	2.059		125	0.674
9	41.84		48	7.745		87	1.996		126	0.658
10	39.87		49	7.453		88	1.934		127	0.64
11	38.01		50	7.173		89	1.875		128	0.623
12	36.24		51	6.905		90	1.818		129	0.607
13	34.57		52	6.648		91	1.736		130	0.592
14	32.98		53	6.403		92	1.71		131	0.577
15	31.47		54	6.167		93	1.658		132	0.563
16	30.04		55	5.942		94	1.609		133	0.549
17	28.68		56	5.726		95	1.561		134	0.535
18	27.39		57	5.519		96	1.515		135	0.521
19	26.17		58	5.32		97	1.47		136	0.509

Appendix 3: Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(50K)

Temp. （℃）	Resistance(kΩ)		Temp.（℃）	Resistance(kΩ)		Temp.（℃）	Resistance(kΩ)		Temp.（℃）	Resistance(kΩ)
-29	853.5		10	98		49	18.34		88	4.754
-28	799.8		11	93.42		50	17.65		89	4.609
-27	750		12	89.07		51	16.99		90	4.469
-26	703.8		13	84.95		52	16.36		91	4.334
-25	660.8		14	81.05		53	15.75		92	4.204
-24	620.8		15	77.35		54	15.17		93	4.079
-23	580.6		16	73.83		55	14.62		94	3.958
-22	548.9		17	70.5		56	14.09		95	3.841
-21	516.6		18	67.34		57	13.58		96	3.728
-20	486.5		19	64.33		58	13.09		97	3.619
-19	458.3		20	61.48		59	12.62		98	3.514
-18	432		21	58.77		60	12.17		99	3.413
-17	407.4		22	56.19		61	11.74		100	3.315
-16	384.5		23	53.74		62	11.32		101	3.22
-15	362.9		24	51.41		63	10.93		102	3.129
-14	342.8		25	49.19		64	10.54		103	3.04
-13	323.9		26	47.08		65	10.18		104	2.955
-12	306.2		27	45.07		66	9.827		105	2.872
-11	289.6		28	43.16		67	9.489		106	2.792
-10	274		29	41.34		68	9.165		107	2.715
-9	259.3		30	39.61		69	8.854		108	2.64
-8	245.6		31	37.96		70	8.555		109	2.568
-7	232.6		32	36.38		71	8.268		110	2.498
-6	220.5		33	34.88		72	7.991		111	2.431
-5	209		34	33.45		73	7.726		112	2.365
-4	198.3		35	32.09		74	7.47		113	2.302
-3	199.1		36	30.79		75	7.224		114	2.241
-2	178.5		37	29.54		76	6.998		115	2.182
-1	169.5		38	28.36		77	6.761		116	2.124
0	161		39	27.23		78	6.542		117	2.069
1	153		40	26.15		79	6.331		118	2.015
2	145.4		41	25.11		80	6.129		119	1.963
3	138.3		42	24.13		81	5.933		120	1.912
4	131.5		43	23.19		82	5.746		121	1.863
5	125.1		44	22.29		83	5.565		122	1.816
6	119.1		45	21.43		84	5.39		123	1.77
7	113.4		46	20.6		85	5.222		124	1.725
8	108		47	19.81		86	5.06		125	1.682
9	102.8		48	19.06		87	4.904		126	1.64

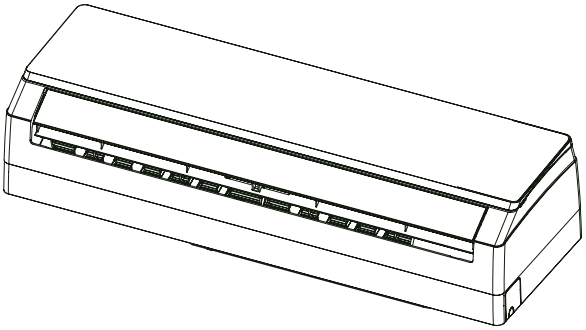
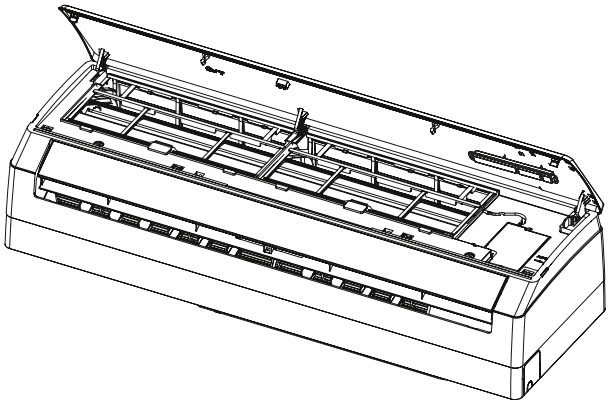
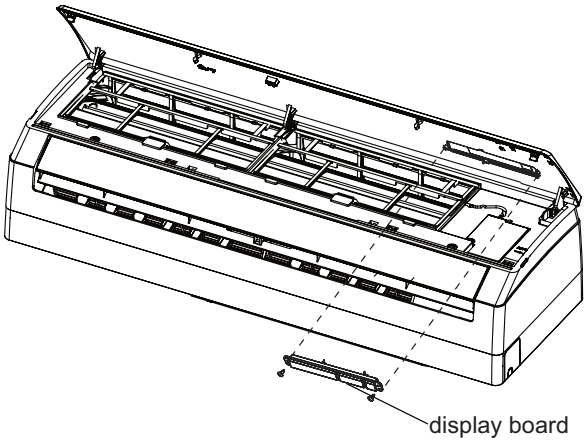
Note: The information above is for reference only.

10. Removal Procedure

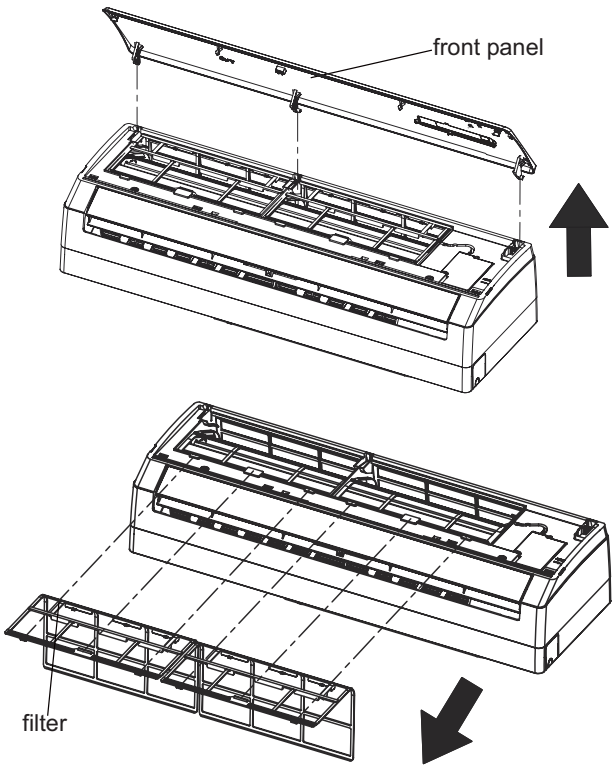
10.1 Removal Procedure of Indoor Unit

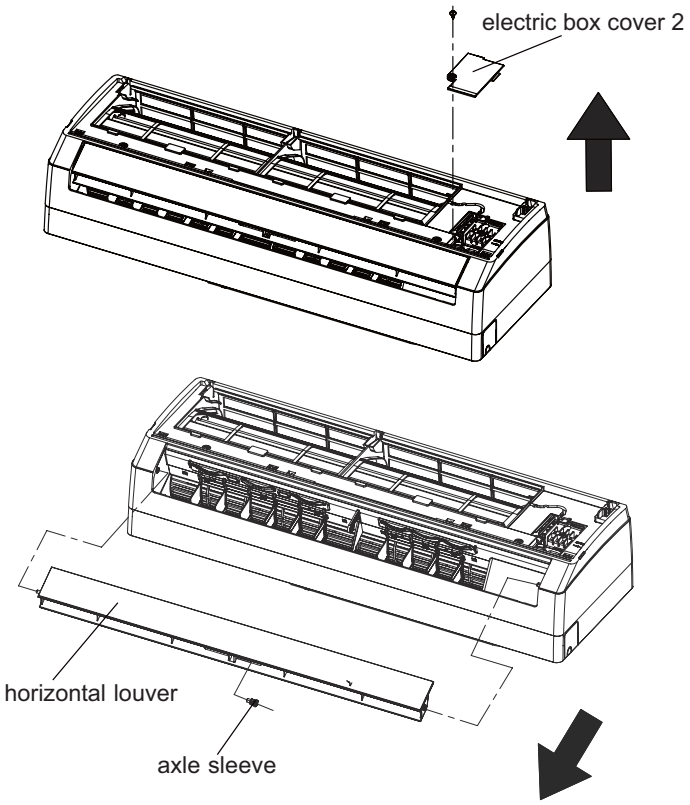
Warning **Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.**

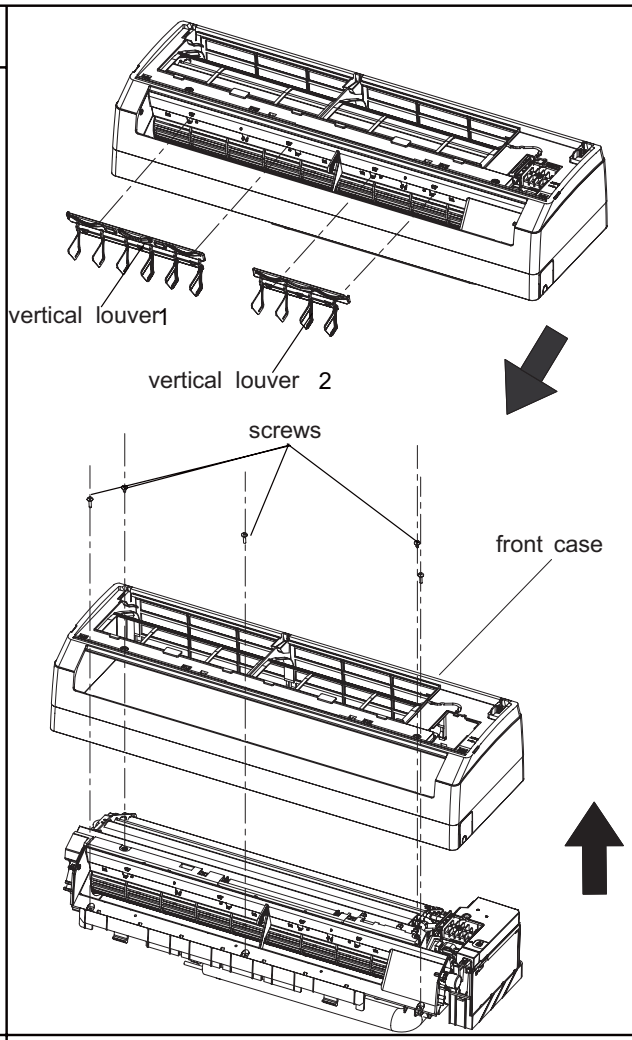
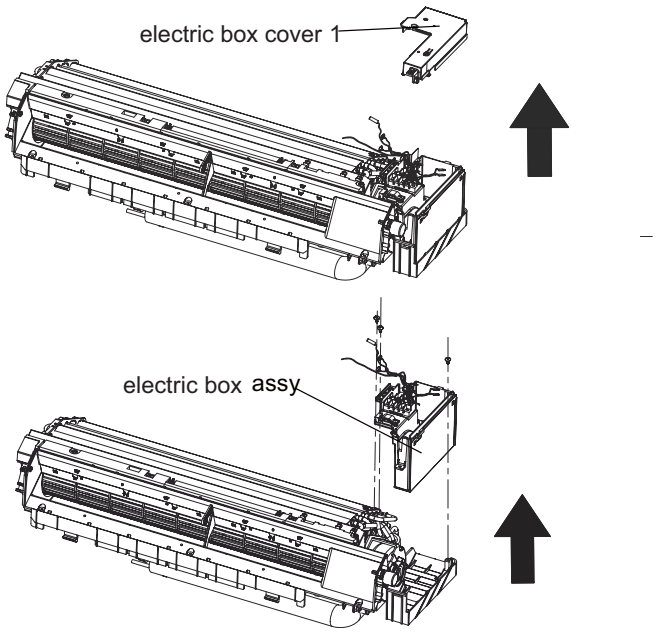
Take model GWH12NB-K3NNB1C as example.

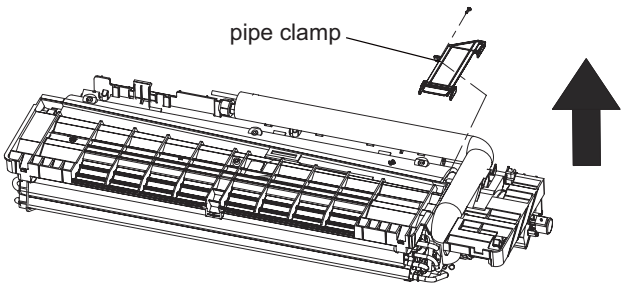
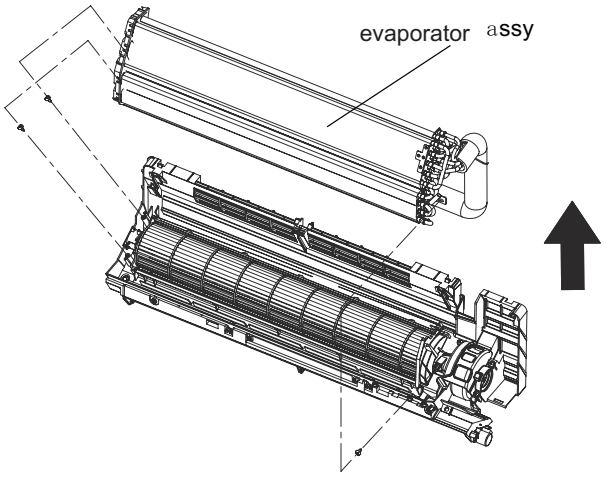
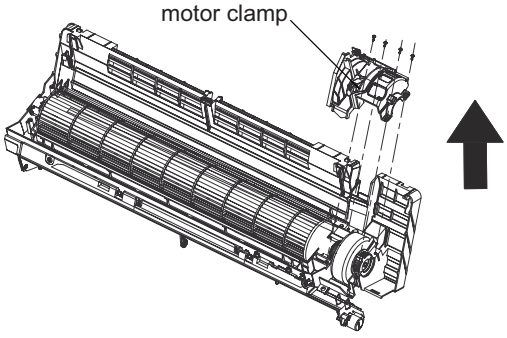
Step	Procedure	
1. Before disassembly		
2. Remove indicator		
1	Open front panel	
2	Remove screws fixing display board and then remove indicator.	

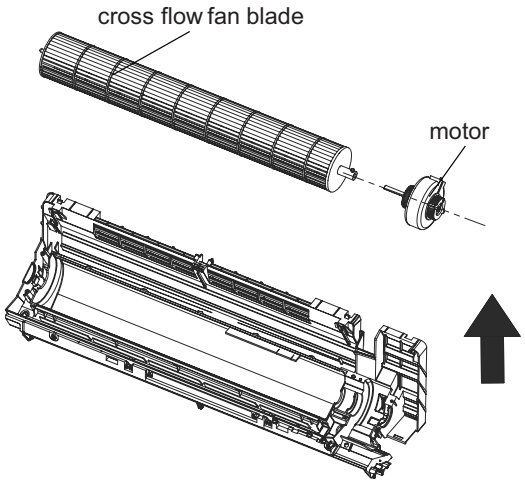
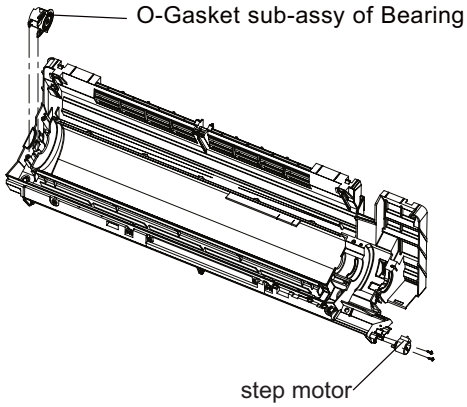
Step	Procedure
3. Remove front panel and filter	
1	Open front panel and slide rotating shaft of front panel along groove fixing front panel to remove the front panel.
2	Push filter inwards and then lift it to remove filter.
4. Remove horizontal louver	
1	Remove 1 screw fixing electric box cover 2 and then remove electric box cover 2.
2	Remove axle sleeve of horizontal louver and then bend the horizontal louver to draw it outwards to remove it.





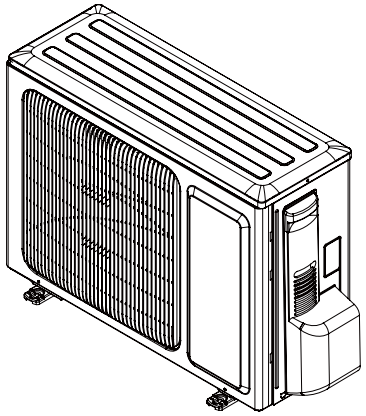
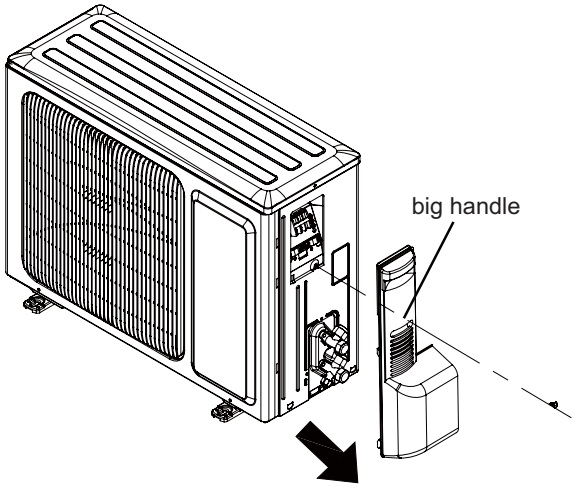
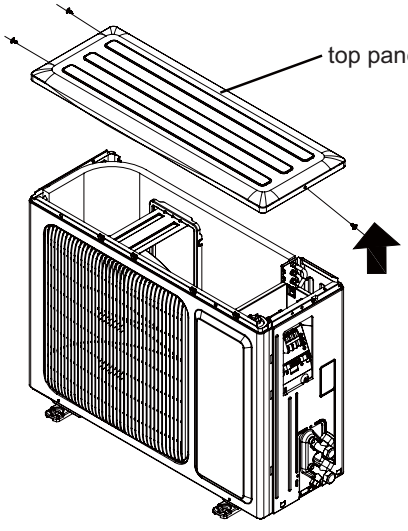
Step	Procedure
5. Remove front case	
1	Loosen clasps between vertical louver and rear case. Then remove vertical louver.
2	Remove screw caps on front case and then the screws on front case. Loosen clasps of front case. Then remove front case.
6. Remove electric box	
1	Loosen clasps of electric box and then remove electric box cover 1.
2	Remove connection screws between electric box and rear case. Unplug wiring terminal and loosen clasps. Remove connection screws between ground wire and evaporator. Unplug indoor temp sensor and then remove electric box.

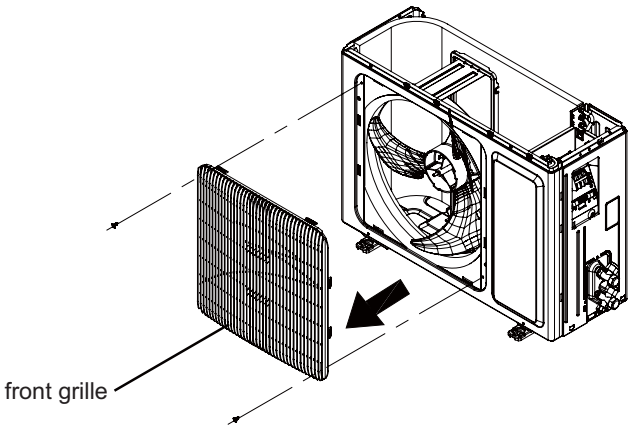
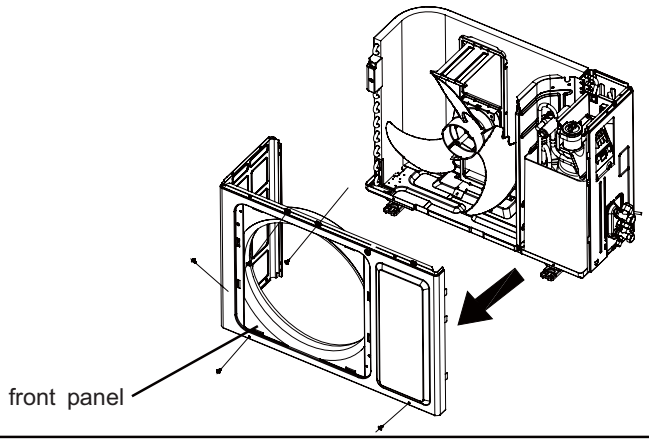
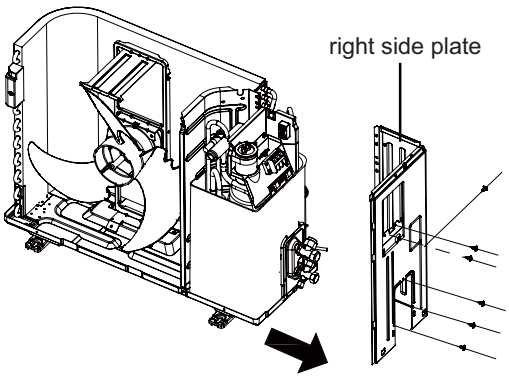
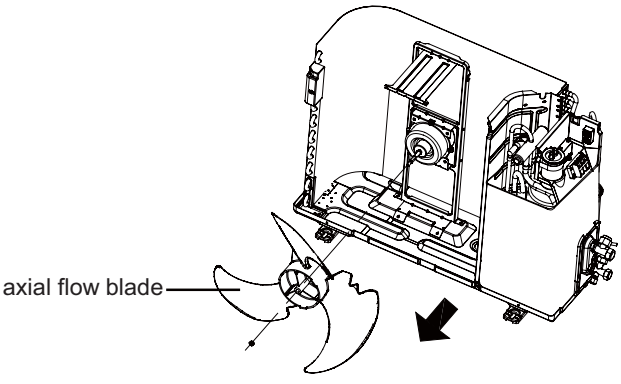
Step	Procedure	
7.	Remove evaporator	
1	Turn over rear case and remove connection screws between connecting pipe clamp and rear case. Loosen clasps between connecting pipe clamp and rear case. Then remove connecting pipe clamp.	
2	Loosen connection screws among evaporator, motor clamp and rear case. Loosen clasps between evaporator and rear case. Slightly adjust pipeline. Then remove evaporator.	
8.	Remove cross flow fan blade and motor	
1	Remove 4 connection screws between motor clamp and rear case. Then remove motor clamp.	

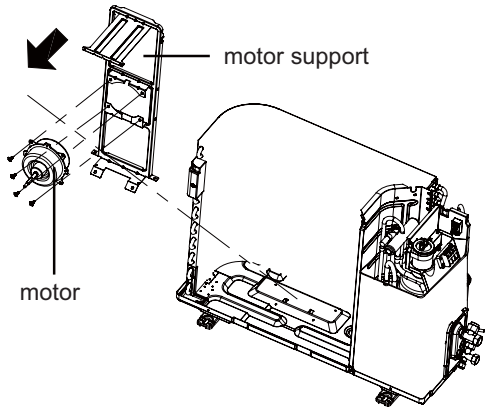
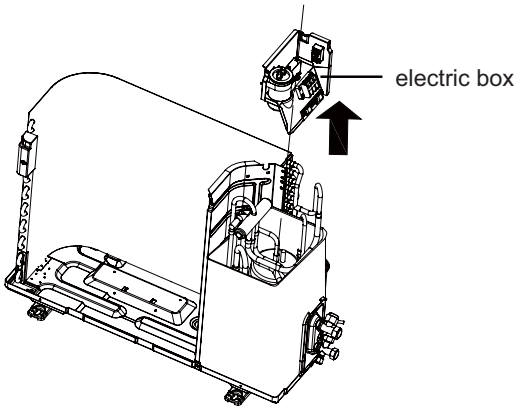
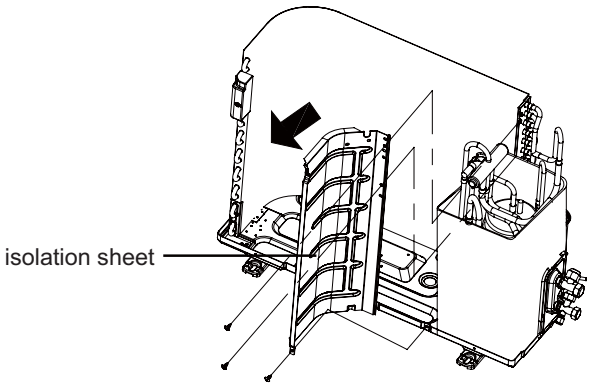
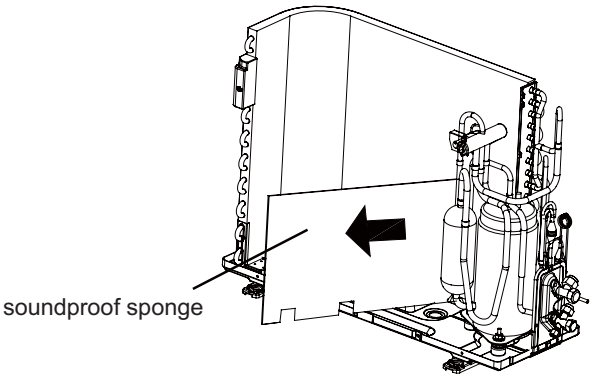
Step	Procedure	
2	Remove cross flow fan blade and motor. Remove connection screws between cross flow fan blade and motor shaft. Then remove motor.	
3	Remove holder of bearing ring and then remove connection screws fixing step motor. Then remove step motor.	

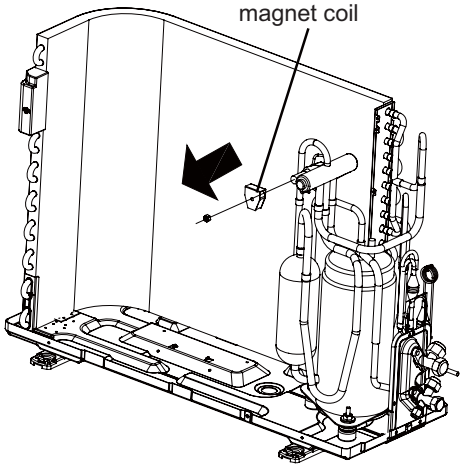
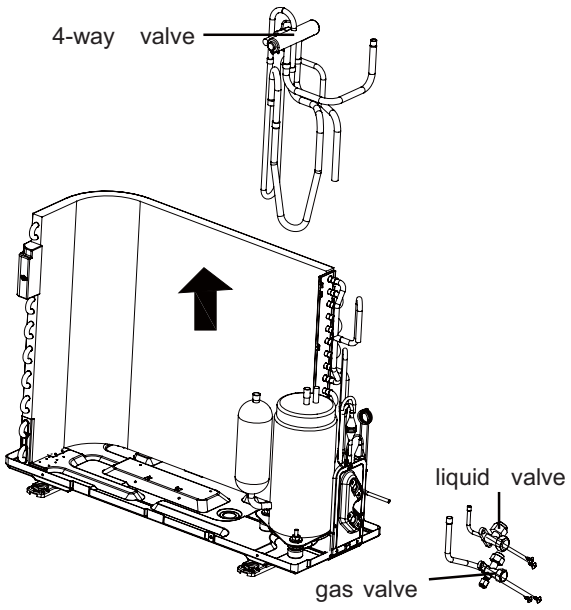
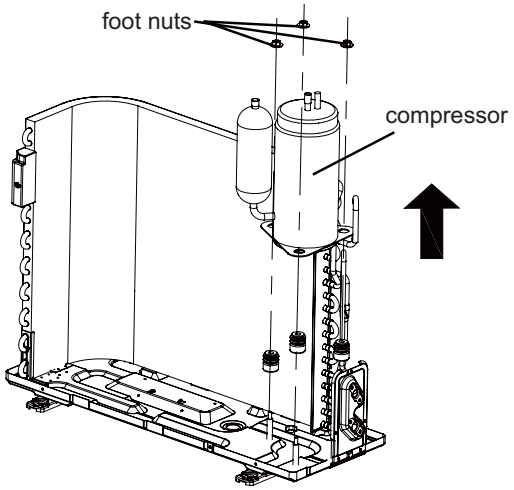
10.2 Removal Procedure of Outdoor Unit

Warning **Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.**

Step	Procedure	
	1. Before disassembly	
	2. Remove big handle Remove the connection screw fixing the big handle and then remove the handle.	
	3. Remove top panel Remove connection screws connecting the top panel with the front panel and the right side plate, and then remove the top panel.	

Step	Procedure	
	4. Remove front grille	
	Remove connection screws between the front grille and the front panel. Then remove the front grille.	
	5. Remove front panel	
	Remove connection screws connecting the front panel with the chassis and the motor support, and then remove the front panel.	
	6. Remove right side plate	
	Remove connection screws connecting the right side plate with the chassis, the valve support and the electric box. Then remove the right side plate.	
	7. Remove axial flow blade	
	Remove the nut on the blade and then remove the axial flow blade.	

Step	Procedure	
	8. Remove motor and motor support	
	Remove the 4 tapping screws fixing the motor and disconnect the leading wire insert of the motor. Then remove the motor. Remove the 2 tapping screws fixing the motor support and lift the motor support to remove it.	
	9. Remove electric box	
	Remove screws fixing the electric box subassembly; loosen the wire bundle and unplug the wiring terminals. Then lift the electric box to remove it.	
	10. Remove isolation sheet	
	Remove the 3 screws fixing the isolation sheet and then remove the isolation sheet.	
	11. Remove soundproof sponge	
	Remove the soundproof sponge wrapping the compressor.	

Step	Procedure
12. Remove magnet coil	
Remove the screw fixing the magnet coil and then remove the coil.	
13. Remove valves and 4-way valve subassembly	
Unsolder welding joint connecting the capillary, the valve and the outlet pipe of condenser to remove the capillary. Do not block the capillary with welding slag during unsoldering. Remove the 2 screws fixing the gas valve and unsolder the welding point between the gas valve and the air-return pipe to remove the gas valve. (NOTE: Discharge the refrigerant completely before unsoldering; when unsoldering, wrap the gas valve with a wet cloth completely to avoid damage to the valve caused by high temperature). Remove the 2 screws fixing the liquid valve and unsolder the welding joint connecting the liquid valve to the Y-type pipe to remove the liquid valve. Unsolder the welding joint connecting the 4-way valve, the compressor and the condenser to remove the 4-way valve.	
14. Remove compressor	
Remove the foot nuts on the compressor and then remove the compressor.	